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Volume of Steel Demand Grows

Improvement Is Reflected in Sales, Inquiries and Rate of Operations—Railroads Continue To Buy Track Material—Steel Prices Are on More Certain Basis—Foundry Iron Market Active

A RISING volume of business resulting from ordinary demand, momentarily augmented by seasonal buying and emergency purchasing in anticipation of a coal strike, bids fair to lift the steel industry to a plane of activity it has not enjoyed since 1920. Orders for cars and track material are continuing to be placed, and a few projects involving fair-sized tonnages of plates, shapes and bars are pending. Aside from the volume of actual sales and the business promised by new inquiry, the most tangible evidence of the present upturn is the increased rate of mill and furnace operation.

Independent steelmakers in the valley are operating at 71 per cent of capacity, this being the highest rate since 1920. The ingot capacity of the principal Pittsburgh producer is around 48 per cent, while the independents are averaging slightly above 50 per cent. It is estimated tin plate mills in the Pittsburgh district are operating at an average of from 65 to 75 per cent, sheet and pipe mills at 60 to 70 per cent and strip mills at 50 to 60 per cent. In the Chicago area, steelmaking activity is rated at from 55 to 60 per cent of capacity.

Car Buying Continues

Railroad buying continues as the outstanding feature of the steel markets. The largest contract placed during the week was for 3300 refrigerator cars for the Pacific Fruit Express. Other awards included 1000 cars for the Great Northern, 45 passenger cars for the Central Railway of New Jersey and 50 cars for the United Fruit Co. Inquiries for 500 cars for Brazil and 11 locomotives for Japan were received during the week. An unusually heavy demand for track material has appeared. The New York Central has placed 12,000 kegs of spikes and 6000 kegs of bolts, the Burlington 10,500 tons of tie plates and 2500 tons of angle bars, and the Norfolk & Western 10,000 tons of tie plates. Recent purchases of rails include 10,000 tons by the Santa Fe, 5000 tons by the Union Pacific and 1000 tons by the Cleveland Railway Co. Japan is inquiring for 5000 tons of 60-pound and 5000 tons of light rails.

A drop of 5 cents since last week brings THE IRON TRADE REVIEW market composite down to $32.81. This compares with $32.88 Feb. 15, and $32.86 for all of February. The composite a year ago was $48.81, and in February, 1920, $65.63.

Steel Demand Broadens

The demand for finished steel is broadening, and certain products which could be delivered within 48 hours of receipt of order several weeks ago, now cannot be promised in less than 10 days or two weeks. Because rolling facilities have been expanded more rapidly than ingot production, there is a momentary shortage of "immediate" steel in a number of plants. The tendency to cut prices on bars, plates and shapes to meet competition, particularly in the East, seems to have subsided. Although shading still is being done, the established levels are being obtained on a larger percentage of the business than heretofore. Large structural awards have not been in evidence during the week. The reported awarding of the contract for the Pershing Square building, New York, requiring 6000 tons has been denied. The contract for a sintering plant for the McKinney Steel Co., involving 1000 tons was awarded to the Austin Co., Cleveland. A power house for the Kansas City Power & Light Co. requiring 1710 tons will be built by the Kansas City Structural Steel Co. The most important contracts pending include that for a 17-mile pipe line for Seattle representing 15,000 tons of ½-inch plates; one for a blast furnace for the Hamilton Furnace Co., Hamilton, O., requiring 1450 tons of plates, shapes and bars; and one involving 1300 tons of shapes for a medical building in Detroit.

Foundry Iron Is Active

Practically all market centers experienced a revival in pig iron buying during the week. In eastern Pennsylvania, sellers of foundry iron reduced their quotations for several days and then resumed a firm stand on the original prices. This maneuver netted sales aggregating about 40,000 tons. Purchases of foundry iron during the week are estimated at 25,000 tons in New York and more than 30,000 in Cleveland. No. 2 iron has stiffened in Pittsburgh, but aside from the brief fluctuations in the Philadelphia market, it may be said that pig iron prices are virtually unchanged. The Carnegie Steel Co. now has 28 active stacks out of a total of 59.

Business Trend and Chart Section Page 595

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The Real Price Position Today

IRON and steel prices at the present time are back to about the level of December, 1915 according to the weekly market composite of fourteen iron and steel products, compiled by THE IRON TRADE REVIEW. Clearly this represents a tremendous readjustment. For the significance of this statement to be better understood, however, the underlying facts must be more closely examined.

The market composite shows that the high point of the upward movement of prices was reached in August, 1919 and the figure then stood at $89.69. The decline from the crest of the market to the figure of $32.86 for the week of Feb. 23, accordingly amounts to $56.83 per ton or approximately 63 per cent. In other words the market today is on a little more than one-third basis compared with the peak. It is interesting to note that from the time prices began definitely to rise in the war period, or in April, 1915, it took about two years for the market to reach its summit. The recession movement has been much slower.

Taking 1913 as a typical and substantially normal prewar year, the market today represents an advance of about 25 per cent. The composite for all 1913 was $26.32 per ton, or $6.54 below the level of last week.

Where this additional $6.54 per ton comes in can be readily understood if present day conditions of production are analyzed. Freight rates on the raw materials entering into iron and steel, since 1913 have advanced approximately 100 per cent. To take a typical case, this means at least $4.50 more per ton of pig iron manufactured in the Mahoning valley according to carefully compiled statistics, and corresponding advances elsewhere. It certainly represents not less than $6 per ton of finished steel. Some manufacturers put it considerably higher depending upon their location. For general purposes of comparison, it may be stated that the advance of the market over 1913 to date substantially represents the added amount of raw material freight.

But there are various other factors of increase to take into account besides direct freight on manufacturing materials. Increased freights have applied with cumulative force to the prices for the hundred-and-one things that the blast furnace, steel works or rolling mill buys for maintenance, repairs and general upkeep, all of which must come out of general if not from manufacturing profit. Then the sharply increased labor factor both direct and indirect applies with cumulative force to iron and steel costs. The common labor rate of the Steel Corporation in 1913 was 18 cents per hour; today, it is 30 cents per hour even after substantial reductions. Skilled mill labor is correspondingly higher. Increased labor, apart from higher freights, operates materially to raise prices on the raw materials to the blast furnaces and steel works. This effect can be seen in such prices as $5.55 per ton at lower lake ports for Mesabi nonbessemer iron ore today compared with $3.60 in 1913; in $3.25 furnace coke at the mines as against $2.35 average in 1913; in the spread between coal prices at the mines, etc.

These facts tend to demonstrate conclusively, one fact—that iron and steel prices under prevailing conditions have been completely liquidated, probably over-liquidated considering the position of other commodities. Steel prices especially reflect this truth. Curiously the 1913 average for steel bars was 1.40c Pittsburgh and of shapes and plates 1.45c or almost exactly at the level of the general market today. It is not difficult to see that, with proper valuation of the changed conditions of costs and production, 1.50c to 1.45c steel today is equivalent to at least 1-cent steel in prewar days. And 1-cent steel always has been regarded as a starvation price for the mills. There is plenty of evidence that present prices are at the starvation point for the mills and are tremendously in favor of the consumer.

What Is Just Cause for Rejection?

FOR the modern sheet producer what is termed "loose" rolling has become the "modus operandi" for the production of full finished automobile sheets. While it is the slowest process

and by that token the costliest, it has been found that chances for rejection are fewer. For some time past inspection of these full finished sheets has been most severe as a result of the absence of work in automobile plants and also perhaps to the employment of too many inspectors under curtailed operating conditions. Checker marks invisible before the baking or enameling stage and but slightly visible afterward, have been sufficient cause for sheets to be returned to the maker. Other similarly unimportant causes for rejection such as stretcher marks have been used as excuses for returning tonnage to the mills or for the presentation of claims for adjustment. Thus, in many cases orders have been filled at sizable losses to the sheetmaker.

Inspection to see that material comes up to specifications is just and right, but it is to be hoped that hypercritical inspection for the sake of attaining results in order to hold down a job will be done away with for the reason that if perfection is demanded from the sheet mills, perfection will have to be paid for by the sheet consumer and in turn by the user of the product made from the sheets. This necessarily will send prices, if not soaring, at least considerably higher and the "vicious circle" again will have started, eventually to show its effect upon items other than automobiles.

The Truth Shall Be Known

DR. ROYAL COPELAND, health commissioner of New York city, has asserted that "with proper publicity, the medical profession could wipe disease off the face of the earth". Dr. Charles H. Mayo, the eminent surgeon, observed in connection with the widespread criticism of publicity methods adopted by the well known Austrian specialist, Dr. Lorenz, during his present stay in the United States, that if Dr. Lorenz's visit did no more than disclose the great number of heretofore unknown sufferers from paralysis, it would have proved a noteworthy service. Thousands did not know their ills could be cured until the publicity aroused by the Viennese surgeon's visit brought news of medical progress.

The professionals, including notably doctors, lawyers and engineers, have clung to a code that severely frowned upon members of the profession who advertised themselves as persons in other trades advertised. This policy was formulated many many years ago as a "silence strike" against the actions of men more skilled in publicity methods than in the professions which they presumed to represent. Had Admiral Perry followed the same policy as a result of the Dr. Cook episode, the world would never have known that he discovered the north pole.

In recent years much of the opposition to making public certain classes of manufacturing and trade information has been broken down. What were once so-called trade secrets, now are passed along for the common good, possibly as a result of the co-operative influence of engineering and technical societies. The engineering profession recognizes the need for such a policy.

Many years ago, publishers sinned in permitting the publication of untruths; they are practically unanimous in refusing such publication today. The professionals are sinning today in retarding the publication of truths as a result of the "silence strike" code, never justified and worse than useless today. "To discover" is important; "to let the world know" is more important.

Co-ordination of Transportation

THE rapid development of the motor truck has outdistanced the progress in transportation legislation, until today, when a truck line carrying freight parallels a steam railroad no one knows the respective rights of the carriers. The truck line uses a highway which the community pays for and the railroad runs up a deficit which the community refunds.

Recently such a parallel system of carriers was in operation between two industrial centers in the East. The traffic was heavy and each line was envious of the other's share in the attractive revenue. The railroad appealed to state authorities on the ground that it was a public utility and needed community support. Some time later a state law was passed limiting the weight of truck loads on state highways and incidentally putting out of business the truck line which carried freight in competition with the railroad which had made the complaint.

The question before the country is not which carrier was right in this particular case, but rather what is to be done about the co-ordination of all transportation mediums. The truck line must be recognized just as railroads which paralleled canals had to be recognized when they first entered the transportation system. Each different carrier should have its sphere of activity defined. Truck lines should be so stabilized as to permit long distance shipment by train and truck, one carrier transferring to the other, just as one railroad transfers to another railroad. This is already being done in some sections of the country through the use of unit containers which have a capacity of perhaps a ton and which are transferred from one type of carrier to another without interference with their contents. The question of rates, the use of public highways, the adoption of running schedules and other questions pertaining to the operation of freight trucks should be considered either by the interstate commerce commission or some similar national body.

Composite Market Average

Representing the Combined Average Prices per Ton of Fourteen Leading Iron and Steel Products, Yesterday, One Week, One Month, Three Months, One Year and Nine Years Ago

March 1, 1922	February 22, 1922	February, 1922	December, 1921	March, 1921	March, 1913
$32.81	$32.86	$32.86	$33.99	$45.37	$27.93

Products Included Are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

Composite Market Record for Nine Years on Page 642

SCRAP PRICES, PAGE 644, WAREHOUSE, ORE, NUTS, BOLTS AND RIVETS AND PIPE PRICES, PAGE 640

Iron and Steel Prices

Pig Iron

Bessemer, valley	$19.00 to 19.25
Bessemer, Pittsburgh	20.96 to 21.21
Basic, valley	17.75 to 18.00
Basic, Pittsburgh	19.71 to 19.96
Basic, Buffalo	18.50 to 19.00
Basic, delivered, eastern Pa.	19.84 to 20.24
Malleable, valley	19.00
Malleable, Pittsburgh	20.96
Malleable, Chicago	20.00
Malleable, Buffalo, furnace	18.50 to 19.00
Malleable, del., eastern Pa.	22.00 to 23.50

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X East'n and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern del., Phila.	20.85 to 21.85
No. 1X, Buffalo	19.00 to 20.00
No. 2 foundry, valley	19.00
No. 2 foundry, Pittsburgh	20.96
No. 2 foundry, Buffalo	18.50 to 19.00
No. 2 foundry, Chicago	20.00
No. 2 foundry, Ironton furnace	19.00 to 19.50
No. 2 foundry, Cleveland	19.50 to 20.00
No. 2 foundry, del, Phila.	19.85 to 20.85
No. 2 foundry, N. J. tidewater	20.55 to 21.35
No. 2X, eastern del. Phil.	20.35 to 21.35
No. 2X, eastern N. J. tidewater	21.05 to 22.05
No. 2X, eastern del. Boston	23.56 to 24.56
No. 2X, foundry, Buffalo fur.	18.50 to 19.00
No. 2X, Buffalo del. Boston	23.46 to 24.46
No. 2 southern, Birmingham	15.00 to 15.50
No. 2 southern, Cincinnati	19.50 to 20.00
No. 2 southern, Chicago	21.66 to 22.16
No. 2 southern, Philadelphia	23.66 to 24.16
No. 2 southern, Cleveland	21.66 to 22.16
No. 2 southern, Boston	26.16 to 26.66
No. 2 southern, St. Louis	19.44 to 21.72
No. 2X, Virginia furnace	22.50
No. 2X, Virginia Phila.	28.24
No. 2X, Virginia Jersey City	28.66
No. 2X, Virginia Boston	28.58 to 29.08
Gray forge, eastern Pa.	20.00 to 20.50
Gray forge, val. del. Pitts.	20.96
Low phos., standard, valley	31.00 to 33.00
Low phos., standard, Phila.	34.00 to 35.32
Low phos., Lebanon furnace	28.00
Charcoal, Birmingham	30.00 to 35.00
Charcoal, Superior, Chicago	26.00 to 30.50
Silvery Iron	
8 per cent base	
Jackson county, O., furnace	27.10
Tennessee, Chicago delivery	Nominal
Ohio brands, Chicago	32.82
Bessemer Ferrosilicon	
Jackson County, Ohio, furnace	
10 per cent	$36.50
11 per cent	39.80
12 per cent	43.10
13 per cent	47.10
14 per cent	52.10

Ferroalloys

Ferromanganese, domestic 80 per cent, Pittsburgh	67.82
Ferromanganese, 80 per cent, English, c.i.f. Atlantic port	62.50
Spiegel, 18 to 22 per cent furnace spot	30.00
Ferrosilicon, 50 per cent, contract delivered	55.00 to 60.00
Ferrotungsten, standard, per pound, contained	35.00 to 40.00
Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, per pound contained, makers plant	13.50c to 14.50c
Imported ferrochrome, 6 to 8 per cent carbon	10.00c to 12.00c
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	$3.75 to $3.95
Ferro carbon-titanium, carloads, producers plant, per net ton	$200.00

Coke

Beehive, Ovens	
Connellsville furnace	$3.25 to $3.50
Connellsville foundry	4.00 to 4.75
Pocahontas furnace	5.00 to 6.00
Pocahontas foundry	6.00 to 7.00
New River furnace	6.50 to 7.50
New River foundry	7.25 to 7.50
Wise county furnace	4.25 to 4.50
Wise county foundry	5.50 to 5.75
Alabama furnace	4.00 to 4.50
Alabama foundry	4.50 to 5.00
Alabama pitch coke	8.00 to 8.50
By-Product	
Foundry, Newark, N. J., delivered	$8.59
Foundry, Chicago, ovens	11.25
Foundry, Boston, delivered	10.15
Foundry, Granite City, Ill., ovens	9.50

Semifinished Material

BILLETS AND BLOOMS	
(4 x 4-inch)	
Open-hearth, Pittsburgh	$28.00 to 29.00
Open-hearth, Youngstown	28.00 to 29.00
Open-hearth, Philadelphia	33.74
Bessemer, Pittsburgh	28.00 to 29.00
Bessemer, Youngstown	28.00 to 29.00
Forging, Philadelphia	37.74
Forging, Pittsburgh	32.00
SHEET BARS	
Open-hearth, Pittsburgh	$28.00 to 29.00
Open-hearth, Youngstown	28.00 to 29.00
Bessemer, Pittsburgh	28.00 to 29.00
Bessemer, Youngstown	28.00 to 29.00
SLABS	
Pittsburgh and Youngstown	$27.00 to 28.00
WIRE RODS AND SKELP	
Wire rods, Pittsburgh	$35.00 to 36.00
Grooved skelp, Pittsburgh	1.40c to 1.50c
Universal skelp, Pittsburgh	1.40c to 1.50c
Sheared skelp, Pittsburgh	1.40c to 1.50c

Shapes, Plates and Bars

Structural shapes, Pittsburgh	1.40c
Structural shapes, Philadelphia	1.71c to 1.81c
Structural shapes, New York	1.68c to 1.83c
Structural shapes, Chicago	1.50c to 1.60c
Tank plates, Pittsburgh	1.40c
Tank plates, Philadelphia	1.71c to 1.81c
Tank plates, New York	1.68c to 1.83c
Tank plates, Chicago	1.50c to 1.60c
Bars, soft steel, Pittsburgh	1.40c
Bars, soft steel, Philadelphia	1.71c to 1.81c
Bars, soft steel, New York	1.68c to 1.83c
Bars, soft steel, Chicago	1.50c to 1.60c
Bars, hard steel, Chicago	1.50c
Reinforcing bars, Pittsburgh	1.40c
Bar iron, common, del. Pitts.	1.78c to 2.02c
Bar iron, common, Philadelphia	1.76c to 1.88c
Bar iron, common, New York	1.78c to 1.88c
Bar iron, common, Chicago	1.60c

Hoops, Bands, Shafting

Hoops, Pittsburgh	1.80c to 2.00c
Bands, Pittsburgh	1.70c to 2.00c
Cold finished steel bars, Pittsburgh base	1.90c

Rails, Track Material

Standard bessemer rails, mill	$40.00
Standard open-hearth rails, mill	40.00
Relaying rails, St. Louis	25.00 to 35.00
Relaying rails, Pittsburgh	25.00 to 30.00
Light rails, 25 to 45, mill	1.40c
Angle bars, Chicago base	2.40c
Spikes, railroad, Pittsburgh	2.10c to 2.35c
Spikes, railroad, Chicago	2.48c
Track bolts, Pittsburgh	2.90c to 3.00c
Track bolts, Chicago	3.48c
Tie plates, Pittsburgh	1.70c to 1.90c
Tie plates, Chicago	1.75c to 2.00c

Wire Products

100 lbs. to Jobbers in Carloads

Wire nails, Pittsburgh	2.40c to 2.50c
Plain wire, Pittsburgh	2.15c to 2.25c
Galvanized wire, Pittsburgh	2.65c to 2.75c
Barbed wire, painted, Pitts.	2.55c to 2.65c
Barbed wire, galv., Pittsburgh	3.05c to 3.15c
Polished staples, Pittsburgh	2.55c to 2.65c
Galvanized staples, Pittsburgh	3.05c to 3.15c
Coated nails, per count keg, Pitts.	1.90c to 2.00c

Chain, Piling, Strip Steel

Chain, 1 in. proof coil, Pitts.	5.50c
Sheet piling base, Pittsburgh	1.45c
Hot rolled strip steel, Pittsburgh stamping quality	1.80c to 2.00c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base	3.50c

Sheets

SHEET MILL BLACK	
No. 28, open-hearth, Pittsburgh	3.00c
No. 28, bessemer, Pittsburgh	3.00c
No. 28, open-hearth, Phil.	3.36c
No. 28, open-hearth, Chicago	3.38c
TIN MILL BLACK	
No. 28, open-hearth, Pittsburgh	3.00c
No. 28, open-hearth, Chicago	3.13c to 3.38c
GALVANIZED	
No. 28, open-hearth, Pittsburgh	4.00c
No. 28, bessemer, Pittsburgh	4.00c
No. 28, open-hearth, Phila.	4.36c
No. 28, open-hearth, Chicago	4.38c
BLUE ANNEALED	
No. 10, open-hearth, Pittsburgh	2.25c
No. 10, bessemer, Pittsburgh	2.25c
No. 10, open-hearth, Phil.	2.61c
No. 10, open-hearth, Chicago	2.63c

Tin Plate

Per 100 lb. box.

Tin plate, coke base, Pitts.	$4.75

Iron and Steel Pipe

Base Discounts Pittsburgh to Jobbers in Carloads

	Black	Galv.
1 t 3-inch, butt steel	71	58½
1 to 1½-inch, butt iron	44½	29½

Boiler Tubes

Carload Discount 4 Points Larger

Steel, 3¼ to 13 inches, 1. c. l.	53 off
Charcoal iron, 3½ to 4½ inches, 1. c. l.	28 off

Cast Iron Water Pipe

Without War Freight Tax
Class B Pipe

Four-inch, Chicago	$46.60 to 48.10
Six-inch and over, Chicago	42.60 to 44.10
Four-inch, New York	50.30
Six-inch and over, New York	47.30 to 48.30
Four-inch, Birmingham	37.00
Six-inch and over, Birmingham	33.00
Three-inch, Birmingham	43.00

Class A pipe is $4 higher than Class B.
Standard fittings, Birmingham, base, $100.00
6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus ; 3-inch, plus $20; gas pipe fittings, $5 higher.

Prices Present and Past

Representative market figures yesterday, one month ago, three months ago and one year ago

	March 1, 1922	Feb. 1922	Dec. 1921	March 1921
PIG IRON				
Bessemer, valley, del., Pittsburgh	$21.21	$21.31	$21.96	$28.96
Basic, valley, del., Pittsburgh	19.71	19.81	20.61	26.56
No. 2 foundry, del. Pitts	20.96	20.96	22.26	27.96
No. 2 foundry, Chicago	20.00	18.85	20.00	26.00
Lake Superior charcoal, Chicago	30.50	30.50	31.50	38.50
Malleable, valley	19.00	19.00	20.00	26.40
Malleable, Chicago	20.00	18.85	20.00	26.50
*Southern No. 2, Birmingham	15.25	19.25	17.15	25.70
*Southern Ohio, No. 2 Ironton	19.00	19.25	20.00	27.50
Basic eastern del., eastern Pa.	19.84	19.84	20.80	26.20
**No. 2X, Virginia furnace	22.50	22.00	22.50	28.05
**No. 2X, eastern del. Phil	20.85	21.35	22.00	27.40
Gray forge val. del. Pittsburgh	20.96	20.96	21.56	26.96
Ferromanganese, del., Pittsburgh	67.82	65.32	60.00	89.00
SEMIFINISHED MATERIAL—				
Sheet bars, bessemer, Pittsburgh	29.00	29.00	30.00	39.60
Sheet bars, open-hearth, Pitts	29.00	29.00	30.00	39.60
Billets, bessemer, Pittsburgh	28.00	28.00	29.00	38.50
Billets, open-hearth, Pittsburgh	28.00	28.00	29.00	38.50
FINISHED MATERIAL—				
Steel bars, Pittsburgh	1.40	1.40	1.50	2.00
Steel bars, Chicago	1.50	1.52	1.60	2.38
Steel bars, Philadelphia	1.76	1.76	1.85	2.35

	March 1, 1922	Feb. 1922	Dec. 1921	March 1921
FINISHED MATERIAL Continued				
Iron bars, Philadelphia	$1.76	$1.76	$1.85	$2.55
Iron bars, Chicago mill	1.60	1.60	1.65	2.65
Beams, Pittsburgh	1.40	1.40	1.50	2.10
Beams, Philadelphia	1.76	1.76	1.85	2.40
Beams, Chicago	1.50	1.52	1.64	2.50
Tank plates, Pittsburgh	1.40	1.40	1.50	2.05
Tank plates, Chicago	1.50	1.52	1.60	2.40
Tank plates, Philadelphia	1.76	1.76	1.85	2.40
Sheets, blk., No. 28, Pittsburgh	3.00	3.00	2.95	3.90
Sheets, blue anh, No. 10, Pitts	2.25	2.25	2.25	3.05
Sheets, galv., No. 28, Pittsburgh	4.00	4.00	3.95	5.05
Wire nails, Pittsburgh	2.40	2.45	2.75	3.05
COKE—				
Connellsville furnace, ovens	3.25	2.95	2.80	4.55
Connellsville foundry, ovens	4.00	3.80	4.00	6.05
OLD MATERIAL—				
Heavy melting steel, Pittsburgh	14.25	13.95	14.25	15.00
Heavy melting steel, eastern Pa	12.25	12.25	11.90	13.40
Heavy melting steel, Chicago	11.50	11.10	11.35	12.55
No. 1 wrought, eastern Pa	15.50	15.50	15.75	18.70
No. 1 wrought, Chicago	12.00	11.60	12.10	13.50
Rerolling rails, Chicago	12.00	11.50	12.90	13.30

*1.75 to 2.25 silicon **2.25 to 2.75 silicon

Foundry Iron Market Is Active

Temporary Reduction of Prices Moves Large Tonnage of Iron in Eastern Pennsylvania—Prices Stiffer in Pittsburgh—Buffalo Maker May Withdraw from Market—Prospects Brighter in South

Philadelphia, Feb. 28.— An eastern Pennsylvania furnace last Thursday dropped its foundry pig iron price $1 and two other producers immediately followed this example and all went out for business. The result was that including sales in other districts, eastern Pennsylvania iron makers booked some 40,000 tons of foundry iron in the past week. This business generally went at $19 furnace for No. 2 plain (1.75 to 2.25 silicon content) and $19.50 for No. 2X (2.25 to 2.75 silicon content). Following the drive which lasted until Friday or Saturday, these furnaces again advanced their prices and now are quoting the same prices as before, $20 furnace for No. 2 plain, $20.50 for No. 2X and $21 for No. 1X. One furnace is asking 50 cents higher than the latter level. Lower prices still are outstanding on a few tonnages but no new offers are being made on the $19 base. Several hundred tons of copper bearing low phosphorus was sold at $28, furnace, subject to freight rate equalization. A Pennsylvania consumer is inquiring for 1500 to 3000 tons of copper bearing low phosphorus iron. Five hundred tons of gray forge iron during the past few days was disposed of at $19.50, eastern Pennsylvania furnace.

Demand Is Light

Chicago, Feb. 28.—On the light demand for small lots of foundry iron for immediate delivery the Chicago pig iron market is maintaining $20 although strength is lacking and rumors of concessions in silicon are heard. On competition with southern iron in the West a delivered price figuring back to lower than the market at Chicago has been made. Inquiry, which is light, is mostly for small tonnages and no forward buying is noted. However, the melt is increasing as is shown by larger shipments and an increased coke demand. A Chicago machinery builder is inquiring for 500 tons of malleable. Another consumer, with plants at Chicago and in Wisconsin, wants 3500 tons of foundry iron. A Milwaukee foundry has been asking prices for 2000 tons of northern and 800 tons of southern iron. A Chicago user wants 200 tons of foundry and several Wisconsin users are asking prices on hundred-ton lots.

An Elgin, Ill., melter bought 800 tons of southern foundry iron on a basis of $15.50, Birmingham. Barge shipments now are delivered to Chicago at $20.50 a ton, slightly under Chicago iron after the switching charge on the latter has been added. Sales of southern iron are increasing. Lake Superior charcoal quoted at $22.50, furnace, or $26, Chicago, by one interest is believed to apply on a limited tonnage to raise funds. Other makers are asking $27 to $28, furnace. Silvery iron is quiet. The spiegel and ferromanganese market is inactive. An inquiry for 200 tons of low phosphorus iron has appeared but no activity in this grade is reported by interests in this district.

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Sales Continue To Grow

Cleveland, Feb. 28.—The northern Ohio group of furnace interests, with stacks in Cleveland and outlying dis-

tricts, in the last calendar week of February sold 33,000 to 35,000 tons in this district over a week ago at $17.75 minimum went to a valley proof of pig iron. The sales and shipping records for February surpass those of January, and some producers booked a larger amount of business than in last October. The character of the demand is shown by the fact that it is composed almost entirely of small lots, averaging 300 tons. One maker is practically out of the market, its stock being so limited that it is refusing to quote on current inquiries. This is due in a measure to the possibility of a coal strike. It is supplying regular customers and maintaining steady shipments on contracts. It had planned to blow in another furnace April 1, but this is uncertain owing to the coal situation. Generally, however, the threatened coal strike is having little effect on operations or business. Prices are firm, $19.50 to $20 being quoted in the Cleveland district, and $19 in outlying districts. The Link-Belt Co., Chicago, is inquiring for 500 tons of malleable iron for its Indianapolis plant, while the National Cash Register Co., Dayton is asking for prices on four carloads of 2.75 to 3.25 silicon iron.

Foundry Grades Again Active

Pittsburgh, Feb. 28.—Once again foundry grades of pig iron take precedent over steelmaking material in this district. Prices are, if anything, a trifle stronger, there being no reappearance this week of the $18.75 price offered one week ago and both makers are firm upon a $19 valley basis for the No. 2 grade (1.75 to 2.25 silicon). One sale of 300 tons is noted at 25 cents in advance of that figure but sales at the $19 price are numerous, involving 50 to 1000 tons, most of the orders coming to producers from regular customers. Recent entrants into the market since the large sanitary manufacturing company referred to last week closed on a total of 7000 tons of northern and southern iron have included such concerns as the Pittsburgh Foundry & Machine Co. and the Pittsburgh Valve Foundry & Construction Co., although their orders are much smaller. The Iron City Sanitary Mfg. Co. is inquiring for 500 to 1000 tons of northern foundry iron and 300 tons of southern. The National Radiator Co. is about ready to close on approximately 3000 tons for its three plants, Trenton, N. J., Johnstown and New Castle, Pa. In malleable iron, little interest in manifest although the Pressed Steel Car Co. is understood to have closed upon 100 to 200 tons of malleable and bessemer at about $19. Low phosphorus iron likewise is quiet. Among the single carload purchasers is the Reliance Steel Casting Co. This grade now is down $1 and is quoted at $31 to $32 valley. In connection with steelmaking iron only a few small sales of bessemer are noted. One involved three carloads at $19.25 and that price appears to be the usual quotation. Some bessemer still is quoted at $19, valley basis, however, and a few small orders have been written on its books recently by the furnace quoting this figure taking the same freight rate to the Pittsburgh district. Basic is quotable at $17.75 to $18 valley, it now developing that the sale of 1000 tons ducer which still has iron available. No new inquiries for basic are noted. The West Penn Steel Co. recently entered the market for 100 tons of 9 per cent bessemer ferrosilicon.

Round Tonnage Sought

Boston, Feb. 28.—A total of about 10,000 tons of pig iron is being asked for by New England consumers and nearly all of this is expected to be closed during the next ten days. A Massachusetts textile machine manufacturer is in the market for 1000 tons of iron with 3.25 to 3.75 per cent silicon, and a Rhode Island consumer is asking for 900 tons in two lots, one of No. 2X (silicon 2.25 to 2.27) and one of No. 1X (silicon 2.75 to 3.25). In addition to these inquiries, several consumers are in the market for relatively small lots and the H. B. Smith Co., Westfield, Mass., is tentatively inquiring for 7500 tons. Sales during the week have been few, and total tonnage represented is small. A Massachusetts foundry took 150 tons of No. 2X Buffalo iron at $18.25, furnace, or $23.71, delivered. The Sullivan Machinery Co., Claremont, N. H., is understood to have purchased 150 tons Several small eastern Pennsylvania sales were made at $19, furnace, or $23.06, delivered. Prices in general have not changed.

May Withdraw from Market

Buffalo, Feb. 28.—One furnace interest reports inquiries for 5500 tons of pig iron, of which the largest is one for 1000 tons of foundry. This interest booked 2000 tons at $18.50 to $19. A 500-ton lot of 2.25 per cent silicon iron brought $19. Another seller who is operating two stacks is considering withdrawing from the market. One furnace is running on basic for its own steel requirements and the other is sold so far ahead that there is reluctance to book much more.

Eastern Business Expands

New York, Feb. 28.—Pig iron buying here in the past week assumed a larger volume than in any similar period for a long time. Fully 25,000 tons of foundry iron was involved. A New Jersey cast iron pipemaker bought 7500 tons and a New Jersey soil pipe plant, in conjunction with an associated interest, bought 5000 tons or more. A Connecticut melter bought 1000 tons, a New York state melter took 1000 tons and a New Jersey melter, 1000 tons. Numerous smaller tonnages were placed. Current inquiry is good and requirements are expected to be closed over the next couple of days aggregating 5000 to 10,000 tons. This business brought out the fact that the $20 base could be shaded on eastern Pennsylvania foundry. Prices done on large blocks of eastern Pennsylvania foundry iron during the past week were $19, furnace, for 1.75 to 2.25 silicon and $19.50 for 2.25 to 2.75 silicon. This shading was participated in by most of the eastern Pennsylvania makers. One of these makers, however, instead of meeting the cut prices actually advanced its figures and now is quoting $20.50, furnace, for 1.75 to 2.25 silicon, $21 for 2.25 to 2.75, and $21.50 for 2.75 to 3.25 silicon. Included in the business placed in this district during the past week were some large tonnages of Buffalo foundry which went at prices ranging from $18 to $18.50, furnace, for 1.75 to 2.25 and 2.25 to 2.75 silicon. It is learned that there is no foundation for reports that Buffalo iron was to be had at less than $18. It appears that in some instances there were offers at lower than $18 but no iron was forthcoming at a lower price. Small tonnages of Alabama foundry have been sold for shipment to this district at $15.50 Birmingham. This is equivalent to $24.70 delivered Newark, N. J.

Brisk Demand in Southern Ohio

Cincinnati, Feb. 28.—February sales records in the Cincinnati pig iron market show a decided improvement over those of January, and are larger than those of any previous month since the early part of 1921. Heavy tonnage transactions have been negotiated during the past few days. One Cincinnati seller today booked orders for an aggregate of 4800 tons, the greater part for eastern shipment. The same agency late last week sold a large tonnage for delivery west of the Mississippi river. Another Cincinnati representative of a southern furnace sold 4000 tons to an unidentified consumer and 200 tons to a user in Northern Ohio. Collectively other agencies disposed of several 500-ton lots, and one or two 1000-ton lots and scores of carload and 100 and 200-ton lots. In the readjustment of an old contract one seller here was able to add 2000 tons to its order book. Inquiries continue to increase daily and while they represent small lots, the aggregate is large and the increasing tonnage is evidence of larger consumption. Among the new inquiries is that of the National Cash Register Co., Dayton, O., for 200 tons of northern foundry. Central Ohio users have asked quotations on 200 and 300-ton lots aggregating 1000 tons and a Cincinnati consumer is in the market for 200 tons. One carload each of low phosphorus, bessemer and 8 per cent silvery are included in the prospective new business. When large tonnages are involved consumers have no trouble in obtaining a $19 quotation, but on small tonnages the prevailing price is $19.50, Ironton. Small lots of southern iron generally command $15.50, while larger offerings bring the minimum price down to $15, Birmingham.

Prospects Brighter

Birmingham, Ala., Feb. 27.—Southern furnace interests say that prospects are somewhat brighter. Sales of pig iron, with few exceptions, have been in two to four car load lots, for delivery within 30 days. More recently, however, a number of larger orders have been booked. One of the smaller companies with one blast furnace in operation has ceased active work for immediate delivery business, being practically out of the market for the time. Prices are weak, $15.50 still being quoted for No. 2 foundry, (1.75 to 2.25 silicon). The report persists that sales have been made recently in this district on the basis of $15 per ton. Production will be increased again this week by the blowing in of No. 4 furnace of the Tennessee Coal, Iron &

Railroad Co., at Ensley. The Gulf States Steel Co.'s blast furnace at Gadsden began making iron recently.

Valley Steelmaking Now Largest Since 1920

Youngstown, O., Feb. 28.—Steelmaking operations in the valley this week are on the highest basis since 1920. Of the 51 independent open hearts, 36 are active, this being 71 per cent of capacity. Orders for finished products are broadening. The Brier Hill Steel Co. and the Republic Iron & Steel Co. each has 10 furnaces active; the Trumbull Steel Co., seven, Youngstown Sheet & Tube Co., six, and the Sharon Steel Hoop Co., three.

Sheet mill schedules also show expansion for the tenth consecutive week. At present the mills are operating on a basis of 53 per cent, the highest rate since last November. Included in this week's schedule are the Trumbull Steel Co. and the Brier Hill Steel Co. with 12 mills each, the Newton Steel Co. with 10, the Republic Iron & Steel Co. with eight, the Youngstown Sheet & Tube Co. with seven, the Sharon Steel Hoop Co. with six and the Falcon Steel Co. with five, a total of 60 active mills of the 115 in the valley.

Nine pipe mills, or 53 per cent of capacity, are engaged this week, distributed five at the Youngstown Sheet & Tube Co. and four at the Republic Iron & Steel Co. The former is operating its bessemer, rod and wire departments and a skelp mill. At the Republic's plant one skelp, plate, hoop and continuous bar mill are rolling. One plate mill at the Brier Hill Steel Co. is active. The Trumbull Steel Co. is operating 16 hot mills at Warren, O., and 10 at its Liberty plants. It has a 100 per cent schedule in its strip departments.

Warehouse Demand Is Small; Prices Hold

WAREHOUSE PRICES, PAGE 640

New York, Feb. 28.—To bring prices more in line with those prevailing in hot rolled materials, a leading jobber in this district has reduced its offerings on cold rolled rounds and flats, shapes and hexagons 10 points, rounds now holding at 3.35c and the other descriptions at 3.85c. Other jobbers are following with similar revisions.

Demand Falls Off

Philadelphia, Feb. 28.—Jobbers in iron and steel materials in this district report the improvement in demand for their products, reported in past month has not been maintained during the week. However, prices are holding at the established levels and no shading is reported.

Improvement is Reported

Cleveland, Feb. 28.—The leading interest here reports demand for iron and steel materials out of warehouse is far in excess of that of last month. Other jobbers report business is at least on a par with that of January. Tonnages are larger and more numerous. Prices are holding and no shading is reported.

Brisk Demand for Coke

Foundries Increasing Stocks—Supplies More Difficult To Obtain in East—Furnace Contract Booked

COKE PRICES, PAGE 574

Pittsburgh, Feb. 28.—Beehive coke oven operators are interested in the recent award of 9000 tons monthly for six months by the New Jersey Zinc Co. to the Pioneer Coal & Coke Co. which order was closed recently at a figure said to be considerably in advance of $3.25, ovens. This consumer is blowing in a furnace to make spiegeleisen. While it is difficult often to find a $3.25 price, some producers with not much in the way of coal backlog are willing to sell at that figure hence from $3.25 to $3.50, continues to represent the quotable market although latterly some middlemen are quoting as high as $4, ovens on certain kinds of 48-hour fuel. No other recent contracts are noted but spot sales of the furnace grade are made from time to time involving one to seven carloads and some difficulty is being experienced in connection with these, not only in obtaining deliveries but in securing attractive prices. This is brought about by reason of the fact that many coke producers are moving slowly about lighting ovens and available coke supplies are not measurably increasing. They apparently are awaiting coal strike developments before deciding what their plan of action will be. Some who might light coke ovens if they were sure they could sell their output at present high figures, cannot do so because their coal production has been disposed of for a period upon an equally attractive basis. There has been considerable improvement in the spot demand for foundry coke, mostly in small lots and some evidence of a desire to stock the 72-hour fuel against coal strike emergencies likewise is manifest. One interest wants 15 cars; another with several plants, an aggregate of about 30 cars, but it is pointed out that should the strike be called off, such sales only will militate against the receipt of regular specifications later. Occasionally a $4 price still appears but $4.25 and $4.50 are the most common quotations and even $4.75 has been obtained on certain brands. Heating coke in lots of one to five carloads is quoted at $3 to $3.35, and in case of a shortage higher figures may prevail shortly. Production according to the *Connellsville Courier* for the week ending Feb. 18 registers another increase, the total tonnage being 102,590 tons as compared with 91,520 tons the preceding week.

More Producers Out of Market

New York, Feb. 28.—Because of active buying, foundry coke is more difficult to get. Six or seven beehive producers are out of the market until March 31. The minimum on standard foundry coke for March shipment now is $4.50, Connellsville, and in several instances special brands are bringing $5 and $5.50. None of the makers are willing to sell beyond March. The Seaboard By-Products Coke Co. has sold all the coke it can produce for nearby shipment. This interest continues to quote $8.59, delivered, to most points on the Erie, Lackawanna and Pennsylvania railroads and $9.15 for Central Railroad of New Jersey points.

Shipments Reflect Uneasiness

Boston, Feb. 28.—Sales and shipments of coke continue to reflect uneasiness over the threatened coal strike. The price of foundry coke in New England is $10.15 delivered. Foundry activity has not changed.

Cincinnati Market Active

Cincinnati, Feb. 28.—The coke market in this district is strong and active. The output of Wise county ovens have been drawn on heavily in the new buying movement. Top prices predominate. A large foundry interest in Muncie, Ind., whose comparatively new plant has been idle for nearly a year, is reported to have accumulated orders insuring a long melt and is preparing to begin operations early in March. It is expected to be in the market soon for coke tonnage. One of the Connellsville plants which recently withdrew from the market will fire a number of its ovens next week and will be in the market for March and April delivery. It is reported that a number of ovens at Turkey Knob, in the Wise county field will be fired within the next two weeks. Coke sales through the Cincinnati market in February are much larger.

Consumers Buy Sparingly

Birmingham, Ala., Feb. 27.—Coke trade shows little improvement. Consumers are buying sparingly, satisfied that when their needs arise there will be no trouble in filling them. Quotations show no change, but weakness still is noted. Foundry coke still carries the $5 base while furnace coke is $1 less.

Strip Orders Are Small

STRIP PRICES, PAGE 574

Pittsburgh, Feb. 28.—Characterized by numerous orders present strip steel business represents a sizable aggregate. Most orders are for a carload or less although occasionally a larger tonnage from 100 tons up has been closed. As has been the case for some time past the automotive industry is the largest consumer at present although other lines likewise are making their needs felt in maintaining and increasing operation among the strip mills. Cold-rolled is firm at 3.50c, base Pittsburgh, although on hot-rolled quotations are regulated by the character and size of the specification, and latterly 1.80c and 1.85c have been appearing more often than 2.00c, which however, still occurs in connection with small orders.

Bar Demand Is Growing

Numerous Orders Are Being Received from Widely Diversified Sources—Most Business Placed at 1.40c, but Below This Figure Was Done

BAR PRICES, PAGE 574

Chicago, Feb. 28.—Booking of soft steel bars, in common with other forms of finished steel, is increasing and demand is coming from widely diversified sources. It has been noted for some time that buying is becoming more general each week, which has been interpreted as a sign of a widespread business revival. Present obligations of mills have deferred deliveries somewhat but they are still able to meet any reasonable requirement. Buying by agricultural implement makers continues on a small scale, with some increase in tonnage. This buying is probably to fill out stocks in certain lines and does not represent a general need on the part of this industry. Present bookings for the most part are made up of small tonnages from a multitude of sources, and aside from carbuilders no one line of industry is taking more than another. Quotations remain steady at 1.50c to 1.60c, Chicago mill, although bars for carbuilding are available at $2 per ton lower. Inquiry for bar iron is confined to small lots, coming from railroads and other consumers. The total business is far from sufficient to keep plants active, and they are operating only part time. The market is being held firmly at 1.60c, Chicago, by most makers, although occasional shading has been met. The market for hard steel bars has not opened, and this product remains quiet except for some tonnages moving to bedstead makers.

Activity More Pronounced

Pittsburgh, Feb. 28.—Activity is more pronounced in merchant steel bars, so much so that from certain mills deliveries in less than three weeks on some sizes cannot be had. The Carnegie Steel Co. has classified its bar customers into 200 groups and the most encouraging aspect of the present buying movement is that it is being conducted by practically all of these classes. Individual orders are not large but automobile, agricultural implement, fabricating, nut, bolt and rivet producers, forge shops, and many others are buying up to 1000 tons at a time. One attractive inquiry now before the trade from a forging company involves 900 tons of three sizes. Because of the fact this is considered but the start of an extensive buying movement, the bar makers are much encouraged over the outlook and a decidedly better feeling exists. While 1.30c, base Pittsburgh, is reported to have been done recently in connection with a large order or two placed at some distance from Pittsburgh, 1.40c, base Pittsburgh, is considered the quotable market.

Buying Movement Heavier

New York, Feb. 28.—Heavy buying has featured the steel bar market in this district during the past week. The biggest purchases originated from jobbers. In addition, there has been some good buying on the part of consumers. Practically all of this business is for immediate rolling. Included in the buying by consumers is a considerable tonnage for use in car manufacturing. Current prices range from 1.30c to 1.40c base Pittsburgh. Only the largest and most attractive tonnages bring out the 1.30c price so that this is not a real market factor. On the ordinary run of business, including lots of 300 to 500 tons the lowest price obtainable during the past week was 1.35c, base Pittsburgh.

Needs Dictate Purchases

Detroit, Feb. 28.—With the market firm at 1.40c to 1.50c, several releases in steel bars were reported in Detroit. Plants are still conservative, however, and are buying only for immediate needs.

Cold-Drawn Orders Increase

Pittsburgh, Feb. 28.—Orders for cold-drawn steel bars are more numerous and the tonnage involved is larger. Makers are encouraged and expect the buying rate to grow, basing their expectations on the fact that inventories have been fairly well liquidated. Present distribution is wider than for a year or more showing more conclusively that stocks are depleted. For the time being 1.90c, base Pittsburgh, appears the general market quotation. Occasionally a buyer hears of a more attractive price but it usually is developed that this has been made on an exceedingly attractive tonnage under special circumstances. On the other hand, up to 2.00c has been obtained on some business but 1.90c is the quotable market today and with merchant steel bars at 1.40c, this leaves $10 per ton for conversion.

Inquiries Are Numerous

Cleveland, Feb. 28.—Seasonable buying has strengthened the bar market in this district and although no large orders have been placed, an encouraging volume of inquiries for small lots continue to be received. A small tonnage of bars will be required for the blast furnace to be built at Hamilton, O., for which contractors and engineers now are figuring. The better tone among the purchasers of agricultural implements is reflected in the slight demand for bars by these interests, who only a few weeks ago declared they would not require any considerable amount of steel for many months. An improved demand from automobile manufacturers also is noted. The price situation in this district remains unchanged, the established level of from 1.40c to 1.50c, Pittsburgh, being strongly maintained.

Increase In Demand

Philadelphia, Feb. 28.—Increased demand from all sources for steel bars has been experienced in this district during the past week. The increased demand, however, was particularly noticeable from cold drawn steel makers. The majority of orders, it is understood, were placed at 1.40c, base Pittsburgh, but some attractive lots are known to have been placed at 1.35c, base. Cold rolled rounds continue to be quoted at 1.50c, Pittsburgh, and a number of sales were noted at this figure. However, this price was shaded on some orders. On material carrying high extras 1.75c base, Pittsburgh, has been done in exceptional instances.

Orders for Bolts, Nuts and Rivets Improved

NUT AND BOLT PRICES, PAGE 640

Cleveland, Feb. 28.—Makers of bolts and nuts in this district report a decided improvement in demand. Orders not only are more numerous but are larger. One interest reports the receipt of an order for two carloads for export to England, and that the same day a similar order was placed for domestic consumption. Carload orders are not as rare as formerly and while individual tonnages still are small, in the aggregate the volume of business is fairly sizable. Automobile makers are buying in small quantities and are understood to be doing considerable inquiring. Car repair companies are also active, and the railroads are understood to be placing orders of fair size. These latter orders are said be fairly numerous.

Demand for rivets like that for bolts and nuts, is also reported improved. Carload orders are being placed more often and the aggregate of orders represents fairly sizable trading. Prices are holding although on large tonnages no doubt shading would develop. The leading rivet maker is maintaining its quoted prices.

Bolt Price Irregular

Chicago, Feb. 28.—Quotations on bolts and nuts have no semblance of regularity and all sorts of prices are being made. As a result some makers are keeping out of the market, as they prefer idleness to losing money on production. Present inquiry is entirely for small lots, with a carload representing the top.

Improvement is Noted

Pittsburgh, Feb. 28.—Orders for nuts, bolts and rivets are more numerous. Individual specifications are increasing in size, and this is looked upon as a good sign. Some few single carloads are being purchased although the less-than-carload business keeps up. Some makers are increasing operations slightly. Prices are not firm although most makers aim to hold close to quoted discounts; sometimes the final 5 or 10 per cent is increased somewhat when an attractive tonnage comes up. Rivet makers report no particularly large orders placed recently. A few makers are quoting from 2.15c to 2.25c, although from 2.00c, base Pittsburgh, to 2.25c is the full spread of the market on structural rivets and 2.10c to 2.35c applies on boiler rivets.

Ordering Rate Better

Philadelphia, Feb. 28.—Demand for bolts and nuts of makers in this district during the past week has registered a slight improvement over that of a few weeks back. Discounts on bolts are being fairly maintained at 70 and 10 off, but occasional shading

is reported on attractive business. Structural rivets are going at 2.10c to 2.25c, while boiler rivets are bringing 2.20c to 2.35c.

New Puddling Rate $8.03; Peak Was $18.76

The puddling rate in the mills represented by the Western Bar Iron association will be $8.03 per ton for March and April, as determined by representatives of the association and the Amalgamated Association of Iron, Steel and Tin Workers Feb. 28. This compares with $8.22 in January and February, 1922; with $18.76 when the rate was at the peak in January and February, 1921, and with $5.60, average for 1914. The average selling price in the first two months this year, on which the new puddling rate is based, was 1.60c per pound. Further comparisons of the selling prices follow:

	1922	1921	1920	1919	1918
Jan.-Feb.	1.60c	2.80c	2.55c	3.10c	3.10c
Mar.-Apr.	....	2.55c	2.70c	2.75c	3.30c
May-June	....	2.30c	3.00c	2.50c	3.35c
July-Aug.	....	1.85c	3.25c	2.50c	3.40c
Sept.-Oct.	....	1.70c	3.40c	2.50c	3.45c
Nov.-Dec.	....	1.65c	3.55c	2.50c	3.45c
Yearly av'ge.		2.14c	3.08c	2.64c	3.34c

Operations at Pittsburgh Increasing

Pittsburgh, Feb. 28.—Operations in the Pittsburgh district are on the increase and a decided better feeling exists among steel producers. The month closes with 28 blast furnaces out of 59 active for the Carnegie Steel Co. instead of 25, as last reported. On Thursday of last week one stack at Clairton was blown in while on Saturday one at Duquesne and the second Lucy furnace at Pittsburgh were lighted, making 26 furnaces producing pig iron and two ferromanganese. This company's ingot making capacity for the present is lower, around 47 or 48 per cent, but it is to be increased soon. Its bar mills are more active and certain sizes of bars cannot be delivered in less than three weeks. Independents are averaging in excess of 50 per cent of steelmaking capacity and it is understood that Weirton Steel Co., Weirton, W. Va., is operating all seven of its open-hearth furnaces. It is estimated that tin plate mills in this territory are operating on an average of 65 to 75 per cent of capacity, sheet and pipe mills, 60 to 70 per cent; wire and strip mills, 50 to 60 per cent and cold-drawn steel bar mills, 25 to 35 per cent.

Chicago Operations Hold

Chicago, Feb. 28.—Operations by Chicago mills remain practically unchanged from last week ,the Illinois Steel Co. continuing 12 blast furnace stacks and producing steel at about 55 per cent of capacity. Inland Steel Co. is operating about 60 per cent capacity and expects to continue this figure for some time. Of the smaller mills producing bars of various sorts, operation is intermittent, those specializing in bar iron being idle at intervals until sufficient orders have been accumulated to make rolling possible.

Plate Business Broadens

Strong Demand Felt for Tank and Car Material—15,000 Tons Asked for City of Seattle—Price Views Are Firmer

PLATE PRICES, PAGE 574

New York, Feb. 28.—While plate buying in this district during the past week did not reach the proportions of bar and shape buying, the total was good. It involved small tonnages. A number of the eastern railroads bought small lots aggregating 500 tons and a good total was represented in buying by tank and boiler shops. Fairly large tonnages in the aggregate were placed by jobbers in this district. Several eastern car builders bought 2,000 tons of plates during the past week. Some locomotive plates also have been placed in this district. While the majority of makers continue to hold at 1.40c, base Pittsburgh, as their minimum it now is easy to place attractive lots of plate at 1.35c. Large lots of plates in conjunction with tonnages of other finished products recently have been booked at 1.30c base Pittsburgh, but this is an exceptional price and cannot be considered as applying to anything except the largest business. The business now before the trade involves about 4000 tons of plates and 2000 tons of shapes for 20 tanks for the Sinclair Crude Oil Purchasing Co., New York. Theodore D. Wells, naval architect, 11 Broadway, has plans for 15 freight vessels for the Central Steamship & Commerce Corp., New York, to ply through the Welland and New York barge canals between New York and Chicago and to the West Indies during the period when canal navigation is closed. The old Dominion Steamship Co. has plans for building either two or four vessels.

Refuse To Meet Low Prices

Youngstown, O., Feb. 28.—With lower price levels governing plate transactions, makers in this district are showing no inclination to participate in current business. In view of quotations of 1.35c, Pittsburgh, on mill size plates of 132 inches, makers are unwilling to consider taking business at a price less than the cost of slabs from which plates are rolled. The leading maker here has notified its district offices that its minimum price on plates ¼-inch and larger and 132-inch mill sizes is 1.65c, Pittsburgh.

Tank Plates In Demand

Chicago, Feb. 28.—In addition to the tonnages of steel plates coming to mills from carbuilders as specifications for new cars are coming out, tank builders are also seeking to place orders. Much of the steel for the new freight cars remains to be specified and this business will furnish rolling for mills for many weeks. The Sinclair Oil Co. is inquiring for 2500 tons of plates for tanks to be fabricated by the Petroleum Iron Works at Argentine, Kans. In addition to cars and tanks, demand is coming from general manufacturers who consume this product, and the result is a satisfactory tonnage coming to producers. The price remains steady at 1.50c to 1.60c, Chicago mill, for ordinary business, while 1.40c, Chicago mill, is being quoted on car building tonnage.

Pipe Line Involves Large Tonnage

Pittsburgh, Feb. 28.—One of the largest plate inquiries circulated in many months now is before the trade here for a pipe line for the city of Seattle, Wash. This involves approximately 15,000 tons. Another inquiry for more than 1000 tons is being sent around in an effort to develop a price below 1.40c. While 1.30c is known to have been done in one or two special instances recently, the regular market cannot be quoted below 1.40c, base Pittsburgh. About 1000 tons is involved in the recent award of four 55,000-barrel tanks for a local oil company to the Riter-Conley Co. Other plate inquiries for smaller tonnages are fairly numerous and plate mill activity is increasing.

Fewer Sales in East

Philadelphia, Feb. 28.—The past week's business in plates here was smaller than in the preceding week. The Newport News Shipbuilding & Dry Dock Co. decided to get out of the government stocks 800 tons of plates for reconditioning the LEVIATHAN. The Pusey & Jones Shipbuilding Co. is still figuring on whether it will buy 1500 tons of plates for two boats for the Baltimore Steam Packet Co., or whether it will get them out of salvage stocks. It is reported that the South Chester tube mill placed 1000 tons of skelp in the Pittsburgh district. By far the most current plate business here is going at 1.40c base Pittsburgh, while 1.35c is appearing occasionally. Eastern plate mills are operating at 25 to 50 per cent of capacity. Locomotive requirements of the Burlington railroad call for 2200 tons of plates. The railroad has placed 47 locomotives with the Baldwin Locomotive Works and eight with the Lima Locomotive Works.

Plate Market Improves

Cleveland, Feb. 28.—The stronger condition of the plate market is well illustrated by the experience of a purchaser in this district who several weeks ago was able to obtain his requirements on about 48-hours' notice. Today he was told that the best delivery the mill could promise would be about 10 days. Sellers of plates in this district are interested in the requirements of a blast furnace to be built at Hamilton, O., which will involve 1450 tons of finished steel, about 1000 tons of which will be plates. Some plate business also is represented in the contract obtained by the Austin Co. for a sintering plant for the McKinney Steel Co., Cleveland. Estimates of the steel requirements for this work vary from 900 to 1200 tons, part of which will comprise plates.

Scrap Prices Strengthen

Steelworks Buying Advances Quotations in Several Markets—Others Show Dullness but General Activity Is Noted—Some High Marks Reached

SCRAP PRICES, PAGE 644

Chicago, Feb. 28.——Conditions in the scrap market at Chicago are holding it steady. Everyone appears to be waiting for the higher prices which seem imminent. Dealers seeking to cover on their contracts find it difficult to buy scrap, as other dealers with stocks are holding them for higher prices. The current supply from producers is light and excess sales must be drawn from yards. With heavy melting steel now at $11.50 to $12, and strong at that figure, it is predicted the next sale of this grade will be at $12.50. Consumers are buying at a better rate than formerly and the slightly better rate of consumption on every hand will lift the market considerably. Railroad offerings are moderate. The Pennsylvania lines, northwestern region, offer 2500 tons, the Chicago Indianapolis & Louisville 400 tons and the Michigan Central an open list. George W. Jennings took bids Saturday on 3150 tons and has a further list of 1275 tons before the trade.

Again Demand Drops

Boston, Feb. 28.—The scrap market conditions at present are about as dull as at any time this year. The meager buying is practically all for speculation. Prices have not changed, as much as conditions would indicate. No. 1 machinery has dropped off $1, sales having been reported at $17.50 delivered Massachusetts. Heavy melting steel is down about 50 cents.

Has Little Life

New York, Feb. 28.—The market in iron and steel scrap, aside from some small buying of borings and turnings and heavy melting steel, is listless. Little material is moving in any quarter. Prices for the most part are unchanged. Some weakness is shown in machine shop turnings, dealers generally, offering $4 to $4.50, f.o.b. New York, but aside from this price are nominally steady.

Buying Adds Strength

Philadelphia, Feb. 28. Heavy buying of steel scrap by four leading consumers in the Pittsburgh district has had a strengthening effect on market here. The prices paid were $14.50 to $15.50 delivered Pittsburgh, equivalent to $12.50 to $13.50 delivered eastern Pennsylvania. It is learned that among others the Cambria Steel Co. bought 4000 to 5000 tons at $14, delivered Johnstown. While no new purchases have been made by eastern mills the latter are all taking in scrap on old contracts so that the movement is larger than for some time. Indications are that part of Hog Island's 105,000 tons of surplus steel sold last week at Washington, will be shipped to Johnstown and Pittsburgh. It is believed a portion of the plate scrap in this lot will be reclaimed. Sales in the past week of wrought pipe, turnings and borings were at higher prices and these grades are held closely.

Greater Activity Noted

Buffalo, Feb. 28.—The present week opened better in the scrap field than any week so far this year. Local dealers received several important inquiries from the Youngstown, O. district for heavy melting steel, hydraulic compressed sheets, turnings and borings. Dealers there are offering $15.50 for heavy melting steel; $13.50 for hydraulic compressed; $11 for turnings and $12 to $12.50 for borings. All these are delivered prices, and are believed to be the result of much increased mill business. Locally all the mills are interested and with production of scrap much under consumption dealers look for a firmer market. The New York Central, Erie, Lackawanna and Lehigh railroad lists close this week.

Market Much Stronger

Pittsburgh, Feb. 28.—Influenced largely by an accelerated demand in the Mahoning valley districts for various grades of scrap as well as by a few sales made locally, prices here on several grades are much stronger. Starting with heavy melting steel which now is quoted at $14.25 to $14.75, other grades to go up 25 cents or more per ton are shoveling steel, knuckles and couplers, coil and leaf springs, No. 1 and No. 2 railroad wrought, machine shop turnings, cast iron borings, rerolling rails, iron and steel car wheels. As high as $15 recently was bid in the Youngstown district on heavy melting steel which automatically would create a $15.75 or $16 market here. Bundled and compressed sheets too are higher from a similar cause. Sizable sales in No. 1 cupola cast are noted since the recent 1000-ton purchase by the National Tube Co. at a price slightly below $16, the present market's minimum. Recent purchases of low phosphorus punchings have been on the basis of $15 to $15.25. The central division of the Pennsylvania is offering a miscellaneous list of 9000 tons.

Improved Activity Appears

Cleveland, Feb. 28.—Slightly greater activity is seen in the iron and steel scrap trade in this district. Some business is coming out, demand chiefly appearing among Mahoning valley and Pittsburgh mills. The market is firm with indications of taking on greater strength in the near future.

Conditions Are Unchanged

Cincinnati, Feb. 28.—Practically no change is noted in iron and steel scrap market conditions in this territory. Few consumers are in the market and buying is in small volume. Dealers are maintaining prices and the few buyers in the market are taking only such tonnage as their spot requirements demand. No inquiries of note are current. Furnace interests in the Pittsburgh district are taking a few carloads from time to time and small shipments are moving to Chicago and adjacent consuming points but in this district proper there is practically no buying.

Reaches High Mark

Detroit, Feb. 28.—A considerably firmer iron and steel scrap market today resulted in heavy melting steel soaring to $9, the highest it has been here in some time. Machine shop turnings were up to $5, and forge flashings exhibited marked firmness at $6.50.

But Little Scrap Moving

Birmingham, Ala., Feb. 27.—Improvement in the scrap market is not noted here. Little material is moving in this district at present. Dealers say consumers are making their own prices, when they are buying. With the exception of cast iron borings, there is no trouble in getting all the scrap needed in meeting demands. Adjoining states are offering scrap in this district but little is being bought with transportation costs high.

New Wire Price

Stimulates Buying in All Grades—Reduction Is $2 Per Ton

WIRE PRICES, PAGE 574

Pittsburgh, Feb. 28.—Clarification of the nail and wire price situation on Feb. 22 when nails were formally reduced $2 per ton to 2.40c from 2.50c, base Pittsburgh, and when the plain wire price of 2.25c was confirmed, has served to bring out considerable business. It took the settling influence of such an announcement to cause many jobbers to place the orders which they had been holding up, and considerable business has been booked within the past few days. Large users of fencing have been coming to the front and the outlook is more encouraging. Carloads are fairly numerous and orders for several carloads at a time are beginning to show themselves. A sizable share of the tonnage leaving Pittsburgh district mills or about to leave this territory is being shipped on barges down the river to Ohio and Kentucky points, as well as distributing centers further south.

Output Still Improves

Buffalo, Feb. 28.—The output of a local wire mill which has been good for months, is improving. The announced Ford Motor Co. production schedule of 100,000 cars for March means a pickup in local spring wire, heading stock, valve stem and bolt stock. The road building program of this vicinity is elaborate enough to indicate a heavy demand for electrically welded mesh this spring. The contract for mesh for use in the new Statler hotel and which was obtained by the Wickwire-Spencer Steel Corp. has been augmented by the Statler announcement of an additional story to be erected. This latter contract amounts to 30 per cent of the total. Wire prices have stiffened with no

sales under 2.25c and a good deal of business being taken at 2.40c.

Nails Shaded, Wire Firm

Chicago, Feb. 28.—While nails may be bought generally at 2.40c, Pittsburgh, which is a recession of about $2 from the previous quotation, wire holds firmly to 2.25c, Pittsburgh, in spite of various rumors that this could be shaded. While these rumors have persisted for some time, producers in this district are inclined to believe they have no real foundation as they find no difficulty in obtaining 2.25c, the lower figure apparently not coming out here. Demand for wire and nails is considerably better at present than over the past fortnight.

All Quote New Level

New York, Feb. 28.—All makers now are quoting 2.40c base Pittsburgh on wire nails. While a number of the makers recently were quoting 2.15c base Pittsburgh on attractive lots of wire, it appears this price no longer is available and all makers are quoting uniformly 2.25c base Pittsburgh. The interesting feature of the market is that the differential between nails and wire now is 15 cents per 100 pounds instead of 25 cents. Galvanized barbed wire now is quoted at 3.05c, base Pittsburgh.

Waiting Policy

Of Tin Plate Buyers Reflected in Small Quantities Being Specified

TIN PLATE PRICES, PAGE 574

Pittsburgh, Feb. 28.—Tin plate purchasers again are guilty of procrastination in specifying and some packers which will need material to be made into cans for fruit late in the second quarter or early in the third have not yet made up specifications. One of these recently negotiated for slightly under 20,000 base boxes of tin plate but failing to develop a lower figure than $4.75, base Pittsburgh, decided to wait. On the other hand, some are buying freely in small quantities and still another group, large can makers, are well fortified in their tin plate supplies. These since late in 1921 have been specifying material which has been shipped and now is being made up. Efforts on the part of representative manufacturers to trace a price of $4.50 recently reported, developed that such a figure was quoted in one special instance by a mill desirous for a particular piece of business. The buyer, however, decided to place the order elsewhere at a higher figure and the $4.50 price was withdrawn. At the present time it appears to be firmly established that $4.60 is the absolute minimum of the market and that that figure applies to purchases of 100,000 base boxes or more by preferential customers who always are quoted a figure below the regular market price. Another figure recently noted is $4.65 and some orders for slightly under 100,000 base boxes have been taken at that figure. On production tin plate, however, the general market is considered to be $4.75 as confirmed by the announcement of Feb. 20 from the American Sheet & Tin Plate Co. that that would apply upon orders from jobbers for shipment during the second quarter.

Sheet Orders Increasing

More Active Market Giving Some Producers Good Backlog—Building Operations Bring Demand for Galvanized

SHEET PRICES, PAGE 574

Youngstown, O., Feb. 28.—Improvement in the sheet market anticipated during the latter part of the first quarter is beginning to manifest itself, although doubt is expressed whether the current revival is of a permanent character. Sheet mill operating schedules broadened this week to 53 per cent of capacity, the highest rate attained since last November. Orders still specify immediate delivery, and makers are encountering difficulty in building up a backlog. Current business is coming from many quarters and while the three principal grades are involved, individual tonnages show no broadening tendency. Efforts have been made by consumers to dislodge present prices but these have met with failure. Investigation of the ultimate use to which the tonnage now coming off the mills is to be put centers almost entirely around automobiles and the accessory business, and already there is appearing some relaxation of opinion in connection with price stabilization. Nothing in the present situation suggests altering the present prices of 2.25c for blue annealed, 3.00c for black and 4.00c for galvanized.

Business at Buffalo Improves

Buffalo, Feb. 28.—Inquiry for sheets specify lots ranging from 20 to 100 tons. Business is steadily improving. The Fegles Construction Co. of Minneapolis has the contract for the new 750,000-bushel addition to the Dellwood elevator. Either galvanized or corrugated sheets will be used in the construction.

Orders Grow; Prices Firm

Pittsburgh, Feb. 28.—Orders for sheets are increasing and since prices are firm the trade is much encouraged. Since the opening of the books for the second quarter on Feb. 20, the American Sheet & Tin Plate Co. has written considerable business. Orders for prompt shipment are fairly numerous. Possibly 75 per cent of the daily orders are for shipment as soon as possible. These are coming from diversified lines of consumption and a considerable proportion is for blue annealed sheets at 2.25c, base Pittsburgh. Some round tonnages of black and galvanized sheets are being placed at 3.00c and 4.00c, base Pittsburgh, respectively. The demand for galvanized indicates more activity in building operations. Electrical sheets continue in fair demand. Some fairly large orders also have been placed for sheets for powder kegs. Automobile companies continue to specify freely but no outstanding tonnages are noted. Full finished automobile sheets, No. 22 gage, remain unchanged at 4.35c, base Pittsburgh. Operations are on a slightly higher scale, a fair average for all mills being about 60 per cent.

Mills Accumulate Backlog

Chicago, Feb. 28.—Consumers of steel sheets continue to buy freely and as a result mills are accumulating such a backlog that deliveries are being deferred somewhat, although no serious delay is being experienced. Prices remain firm. The Inland Steel Co. continues to operate its sheet mill full, with a constantly increasing percentage of domestic business.

Prices Firm at Philadelphia

Philadelphia, Feb. 28.—Sheet business here is on the upturn. Most of it involves small tonnages but some good sized lots are included and full prices are being obtained on large as well as on small lots. In fact, the market is strong at 2.25c for blue annealed, 3.00c for black and 4.00c for galvanized.

Ore Stocks on Hand Less Than Last Year

Cleveland, Feb. 28.—Iron ore producers find the situation with respect to their interests much improved based on their observations of pig iron shipments, and the industrial position in general. Stocks of ore are being consumed at a faster rate than anticipated some time ago, and while far above normal they were 1,000,000 tons less on Feb. 1, 1922 than on Feb. 1, 1921. The stocks on hand at furnaces and at Lake Erie docks for furnaces, Feb. 1 were as follows: Interior furnaces, central district, 20,448,277 tons; eastern furnaces, 2,836,635 tons; lake front furnaces, 10,195,652 tons; a total of 33,480,564 tons.

Ore consumed in January amounted to 2,493,449 tons. Allowing for a consumption of 7,500,000 tons in February, March and April the amount of ore on hand May 1 would be 26,000,000 tons, as compared with 27,500,000 tons on the same day last year. The present consuming rate is steadily increasing over January, but an unfavorable influence is the prospect of a coal strike. The mine operators are studying the consuming rate with much interest to determine how far above normal stocks will be on the date new shipments are supposed to start. On May 1, 1919, the amount of ore on hand was 18,000,000 tons.

Small sales of ore for special filling in purposes continue to be made, but furnace companies are not giving specific indications of their season's requirements.

Some iron ore vessel tonnage has been contracted for on the basis of the going rates for a period of five years.

Sidney E. Phillips, secretary of the Spencer Turbine Co., Hartford, Conn., has been appointed temporary receiver for the Connecticut Blower Co., Inc., Hartford, in place of William A. Foley, removed by the United States district court. The court also ordered the reopening of the plant.

Structural Demand Grows

Opening of Building Season Finds More Projects Coming Out—Labor Trouble Ends at Chicago, Fresh at Cleveland—Week's Buying Less

STRUCTURAL SHAPE PRICES, PAGE 574

Chicago, Feb. 28.—As the building season begins to open, additional buildings are coming forward for bids, in many cases those which have been held back over several years because of unsatisfactory conditions of price or labor. Clubs, banks and hotels which have been planned for some time seem likely to go ahead now that labor and price conditions have improved so materially. General demand for structurals has been increasing steadily, although large projects requiring this material have not been numerous. In addition to the tonnage of shapes required for carbuilding, general manufacturers have increased their requirements for small shapes in common with bars and plates, and the tonnage on mill books is decidedly better. On shapes as well as on finished steel the general market ranges from 1.50c to 1.60c, Chicago mill, with car tonnages available at 1.40c, Chicago mill, although the tendency on the part of some mills is not to quote that figure because of the loss it represents.

Recent Awards Small

Pittsburgh, Feb. 28.—Recent awards of structural shapes have exceeded 100 tons each in several cases although most of the tonnages placed during the past week have been below that figure. The Jones & Laughlin Steel Co. will furnish steel for a shop building for the Columbus Mill & Mine Supply Co., Columbus, O., and structural material for the National Brick Co., Chicago, 125 tons each. Some jobs have reached the hands of general contractors and steel awards are expected shortly. These include the Mellon National bank, 2000 tons, and the South street bridge, Philadelphia, 3000 tons. Structural shape buyers have endeavored to develop a quotation below 1.40c, base Pittsburgh, but except in one or two special instances where the circumstances and the tonnages involved warranted the quotation of 1.30c, 1.40c still is considered the general market and makers generally are firm on that basis. Inquiries are plentiful, fabricators having more tonnage before them than at any time in the past 18 months.

Outlook Is Encouraging

New York, Feb. 28.—While no especially outstanding contracts have been noted during the past weeks in structural steel, the tone of the market remains encouraging. Various jobs are active, and shops are slowly but surely improving their schedules. There has not been sufficient tonnage booked, however, to have any appreciable effect upon prices, which continue to range at $60 to $65 a ton, erected.

The Trenton, N. J., plant of the American Bridge Co., which is now operating at around 15 per cent, contemplates increasing its operations in the near future to 25 or 30 per cent of capacity. The company's Pencoyd, Pa., plant is operating at about 50 per cent, but its Elmira, N. Y., and Edgemoor, Del. plants still are at a virtual standstill. Operations at most of the shops of the eastern independents are averaging around 35 to 40 per cent.

It was reported the general contract for the Pershing Square building, requiring about 6000 tons, has been awarded to the George A. Fuller Co., but this has been denied. Much interest is being centered in the 23,000-ton Castleton bridge of the New York Central, bids on which close March 3.

A fabricator in this district is inquiring for 10,000 tons of shapes, to apply against structural contracts recently booked. The market on plain material may be quoted 1.35c to 1.45c, Pittsburgh, with a concession of five points on a sizable tonnage still possible.

Shapes Most Active

Philadelphia, Feb. 28.—The shape business in this district continues good and results in mill operations show up better than in other finished products. Eastern shape mills now are operating easily 50 per cent and the tendency is upwards. A greater portion of the current business is going at 1.40c base Pittsburgh, with 1.35c on attractive business.

Building Tieup Threatened

Cleveland, Feb. 28.—Bids having closed on three jobs in this district totaling 2600 tons, interest is centering in the pending awards. Six hundred tons are required for a store building and 700 tons for a hotel addition, both in this city, and 1300 tons for a medical building in Detroit. Other and smaller jobs also are waiting decision.

A local fabricator is reported to have asked for protection on 1450 tons of plates and shapes for construction of a blast furnace at Hamilton, O. Just now builders are interested in the outcome of a construction tieup which may result from new wage schedules now before the building trades unions as proposed by employers last Saturday. No changes have been reported in prevailing prices, either on plain or fabricated steel.

CONTRACTS AWARDED

Sintering plant, McKinney Steel Co., Cleveland, 1000 tons, to the Austin Co.

Shop building, Columbus Mill & Mine Supply Co., Columbus, O., 125 tons to the Jones & Laughlin Steel Co.

Structural material for the National Brick Co., Chicago, 125 tons to the Jones & Laughlin Steel Co.

Building, West Thirty-seventh street, New York, 600 tons, to Hinkle Iron Works.

Junior high school, Elizabeth, N. J., 600 tons, to the Hedden Iron Construction Co.

Shelter houses for the Pennsylvania railroad, Jersey City, 330 tons, to Bethlehem Steel Bridge Corp.

Mill building, Holyoke, Mass., 400 tons, to American Bridge Co.

Memorial hospital, Baltimore, 750 tons, to Dietrich Bros.

Power plant addition, Milwaukee Electric Railway & Light Co., Milwaukee, 160 tons, to the Worden-Allen Co.

Freight shed at Los Angeles, for the Union Pacific railroad, 375 tons, to the Llewellyn Iron Works.

Highway bridge, Tomahawk, Wis., 287 tons, to the Worden-Allen Co.

Harbor freight shed, Los Angeles, for the Union Pacific railroad, 180 tons, to the Llewellyn Iron Works.

Addition to northeast station of the Kansas City Power & Light Co., Kansas City, Mo., 1710 tons to the Kansas City Structural Steel Co.

Diocesan seminary for the Roman Catholic church, New Orleans, 664 tons, to Ingalls Iron Works, Birmingham, Ala.

First National Bank building, Albuquerque, N Mex., 527 tons, to reinforced concrete.

Fifty 10 feet x 29 feet 6 inches horizontal tanks, for Standard Oil Co., Whiting, Ind., 268 tons.

CONTRACTS PENDING

Detroit Medical building, Detroit, 1300 tons, bids in.

Plant addition for J. B. Vansciver, Camden, N. J., several hundred tons, pending.

School, Wayne, Pa., 700 tons, pending.

Building, Bank of Commerce, Norfolk, Va., 400 tons, pending

Addition to Gillsy hotel, Cleveland, 700 tons, bids in.

Building for S. S. Kresge Co., Cleveland, 600 tons, bids in.

Mellon National bank, Pittsburgh, 2000 tons, general contract awarded the Mellon-Stuart Co., Pittsburgh.

South street bridge, Philadelphia, 3000 tons, general contract awarded Dravo Contracting Co., Pittsburgh.

Pipe line, Seattle, 15,000 tons of plates; bids being taken.

Christian Science church, Park avenue, New York, 400 tons, pending.

Subway work for Southern Pacific railroad, Houston, Tex., 600 tons, bids being asked.

Power plant addition, New Bedford, Mass., 400 tons, pending.

J. F. Wild & Co. bank building, Indianapolis, bids asked.

Indianapolis Athletic club, Indianapolis, bids asked.

Concrete Bar Tonnages Pending Sizable

REINFORCING BAR PRICES, PAGE 574

Pittsburgh, Feb. 28.—Business pending in reinforcing concrete bars is more sizable than business being placed at the present time. No awards of jobs involving the use of concrete bars are noted this past week except small inconsequential tonnages. However, approximately 3000 tons is estimated to be involved in the numerous projects about to be closed in this district. This aggregate includes 475 tons for the second wing of a 5-wing penitentiary being built at Rockview, Center county, Pa. Bids on this will be taken until March 14. Reinforcing bars for the first wing placed some time ago at 3.25c have been furnished by the Oliver Iron & Steel Co. The present market on reinforiing concrete bars is 1.40c, base Pittsburgh.

CONTRACTS PENDING

Second wing of new western Pennsylvania penitentiary, Rockview, Center county, Pa., 475 tons. Bids taken until March 14.

Business Looking Better

Muskegon, Mich., Feb. 28.—Ross W. Judson, president of the Continental Motors Corp., announces that it has $50,000,000 in orders on its books and that business is looking better than at any time in the last two years. The Continental plant here recently went on a two eight-hour shift basis.

Ask Bankruptcy for Nagle Steel Co.

Philadelphia, Feb. 28.—Petition in bankruptcy against the Nagle Steel Co., Pottstown, Pa., was filed in United

States district court at Philadelphia last Friday by the Alan Wood Iron & Steel Co., Rogers, Brown & Co., and the Cortwright Coal Co. The petitioners allege that last Oct. 26 the Nagle company gave as collateral to three banks first mortgage bonds to the value of $290,000 to cover notes having value of little less than half this amount, making the banks preferred creditors.

Brill Reduces Surplus

For the year ended Dec. 31, 1921, the J. G. Brill Co., reports a profit of $163,399 after allowing for depreciation. The company earned $1,025,321 in 1920. Surplus at the end of the year was reduced by $446,941 to $2,904,251 after paying preferred dividends. In his report to stockholders, President Samuel Curweem said the company's Canadian plant now has sufficient work on hand to keep it running at full capacity and that while the Brill organization enters the year with a comparatively small amount of work on hand there has been great improvement since the first of the year in inquiries received. Prospects for business in 1922 are distinctly favorable. A large number of electric railways are considering the purchase of cars, he said.

Australia Needs Steel

D. A. Ross, Canadian trade commissioner at Melbourne, Australia, writes that the postmaster general announces demands of the postal service require the spending of several million pounds sterling for telephone and telegraph materials. Owing to the stoppage of Australian iron and steel works, due to excessive costs of production, considerable demand exists for galvanized fencing wire, barbed wire, mild steel and iron bars, which should offer opportunities for Canadian manufacturers.

Specify Tin Plate Needs

New York, Feb. 28.—Specifications on tin plate contracts have been unusually good during the past week. In addition, there has been some spot buying. Most of this was at $4.60 per base box, Pittsburgh. While in some cases $4.50 Pittsburgh was done, of late it is not believed that this figure can be regarded as a real market factor except possibly in connection with exceptionally attractive lots.

Weekly Wages Increase

Weekly earnings of New York state factory workers from November to December, increased 59 cents, according to the state industrial commissioner, Henry D. Sayer. Figures were compiled from reports by 1648 representative plants. The average weekly earnings in December, were $24.01, or 12 per cent less than the average of the preceding December.

More Cars Are Purchased

Lots of 3300 and 1000 Head List of Week's Orders—Additional Contracts Pending—Rail and Track Material Buying Continues

RAILROAD TRACK MATERIAL PRICES, PAGE 574

Chicago, Feb. 28.—The buying movement in railroad freight cars continued last week and seems to have settled down to a fairly steady business, with fair lots being awarded frequently. The Great Northern railroad, which was noted last week as placing 500 cars, has placed an additional 1000. The original inquiry of the railroad was for 3000 cars, but the remaining 1500 probably will not be bought for some time. The Pacific Fruit Express has placed 3300 refrigerator cars. The Central Railway of New Jersey has placed 45 coaches. Inquiries for additional cars from the Milwaukee and for a large number for the Chicago & Northwestern have not yet come out.

Demand for track fastenings is active and a large tonnage of this material has been placed with western mills recently. The New York Central railroad has placed 12 000 kegs of spikes and 6000 kegs of bolts with a Chicago mill. The Burlington has placed 2500 tons of angle bars and 10,500 tons of tie plates. The latter is divided, 3500 tons to each of two steel mills and 3500 tons to an iron mill.

Standard steel rails are quiet with about 3000 tons in miscellaneous small lots booked last week by a western mill. The Santa Fe railroad has taken 10,000 tons and the Union Pacific railroad 5000 tons from the Colorado Fuel & Iron Co.

Orders Exceed Inquiry

New York, Feb. 28.—Car orders of the past week well exceeded new inquiry. The largest contract called for 3300 refrigerator cars for the Pacific Fruit Express, and in addition to other contracts made a total of about 5000 cars. Inquiry comprised approximately 750 cars. Locomotive inquiry includes 11 tank locomotives for shipment to Japan, specifications being issued by Mitsui & Co., this city.

Prices Are Firm

Pittsburgh, Feb. 28.—Light rails appear to be firm on the basis of a flat 1.40c, base Pittsburgh price. Large makers having made that quotation for some time past have been followed by others who have been losing out with quotations of around 1.50c. Rerollers too appear to be quoting 1.40c in many cases although in order to obtain business, at times quote 1.35c and lower. Small lots up to a carload are noted, some buyers going together in order to purchase a minimum carload jointly. One inquiry now current before the trade calls for 300 tons, specifications involving four weights.

Tie plates are lower and while as low as 1.65c has been done recently on a desirable tonnage, the market is considered quotable at 1.70c to 1.90c.

The railroads are buying more spikes and several orders now are on the books of makers against which shipments are being made. While 2.04½c and even 2.00c are reported as having been the figures involved in some standard spike transactions recently, 2.10c and 2.15c are the usual quotations on ordinary sized orders. These are quoted at from 2.25c up. Track bolts are quoted at 2.90c to 3.00c, base Pittsburgh.

Railway Places Rails

Cleveland, Feb. 28.—The order for 1000 tons of rails and splice bars for the Cleveland Railway Co., mentioned in these columns recently, has been taken by the Carnegie Steel Co.

Light Rails in Demand

Philadelphia, Feb. 28.—The light rail demand is better than in a long time but is expected to fall off because of the proposed coal strike. Light rails now are 1.40c to 1.45c base Pittsburgh.

The Philadelphia & Reading railroad rail orders are on the point of closing in accordance with distribution mentioned last week. It is expected details of the Chesapeake & Ohio rail business will be announced shortly, and that most of this tonnage will go to western mills. The Pennsylvania railroad is inquiring for 500 to 1000 tons of tie plates. The Reading recently distributed a considerable tie plate business. An award is expected shortly for 50 passenger and combination cars for the Baltimore & Ohio. It is likely these cars will be made at the Harlan & Hollingsworth plant of the Bethlehem Shipbuilding Corp.

The Burlington has placed its 55 locomotives, 47 to the Baldwin Locomotive works and eight to the Lima Locomotive works.

The Norfolk & Western railroad has placed 10,000 tons of tie plates with the Bethlehem Steel Co. and the Whitaker-Glessner Co.

CAR ORDERS PLACED

Pacific Fruit Express Co., 3300 refrigerator cars, 2600 to Standard Steel Car Co. and 700 to General American Car Co.

Great Northern railroad, 1000 cars, 500 gondolas to the Western Steel Car Co. and 500 stock cars to the Pullman Co.

Central Railroad of New Jersey, 45 passenger coaches, 25 from the American Car & Foundry Co.; 10 from Standard Steel Car Co. and 10 from the Bethlehem Shipbuilding Corp.

United Fruit Co., 50 cars from the Magor Car Co.

CAR ORDERS PENDING

Sorocabana railroad, Brazil, 300 stock and 200 gondola, bids asked.

Atlantic Coast Line, 100 phosphate cars, pending.

Cerro De Pasco Copper Corp., 15 Broad street, New York, 35 to 40 miscellaneous cars, pending.

Asiatic Petroleum Co., Woolworth building, New York, 100 tank cars, pending.

Wire Market Is Uniform

Philadelphia, Feb. 28.—The wire market now appears uniform at 2.40c, base Pittsburgh for nails, 2.25c on wire, 2.75c on galvanized wire and $36 on wire rods. Sales are being made at these prices and no shading is in evidence.

Semfinished Looking Up

New Demand Fairly Active, While Releases Continue To Grow—Inquiries Current for Sizable Tonnages of Billets and Sheet Bars

SEMIFINISHED STEEL PRICES, PAGE 574

Pittsburgh, Feb. 28.—The billet market is somewhat more active than that for other semifinished materials. One inquiry involves 300 tons of 1½-inch billets; another, 500 tons of regular billets, while a third calls for a number of 15,000-pound forging billets. The prospective buyer of the latter asked a maker to waive the $10 extra for blooms over 12,000-pound weight, but failed to obtain this concession. Regular forging billets in small lots of 50 or 100 tons are quoted at $32 and a few such orders have been taken. Rerolling billets are quoted at $28 to $30, Pittsburgh. No inquiries or orders for slabs are noted and quotations range from $27 to $28, base Pittsburgh. New demand for sheet bars in this vicinity is low, although specifications from regular customers come in at a fair rate. A few small orders occasionally come from a distance and prices as low as $28, Pittsburgh, have been made in competition. Fair sized lots of skelp are being ordered from large makers although the total tonnage moved cannot be said to be large. One recent inquiry put out here called for 50 tons only. Skelp is quoted at 1.40c to 1.50c, base Pittsburgh. Wire rods in single carloads are sold at $36, Pittsburgh, that representing the usual buying rate. Attractive tonnages bring out lower figures although nothing lower than $35, Pittsburgh, has been developed here.

Releasing More Sheet Bars

Youngstown, O., Feb. 28.—The week just closed brought out little new semifinished business. Interest in this market continues to lean toward sheet bars, specifications for which have been issued freely in view of current improvement in the sheet trade. Quotations on sheet bars continue firm at $29, Youngstown. Billets and slabs are quotable at $28 to $30, and $28, Youngstown, respectively.

More Inquiries Current

Cleveland, Feb. 28.—Current inquiries for semifinished material include 500 tons of sheet bars for a central Ohio consumer and 200 to 300 tons of forging billets for southern Ohio. Among smaller lots is an inquiry for 50 tons of 4 x 4-inch rerollers for a Pittsburgh user. A fair amount of activity is reflected in the market, and the tone is better.

Spiegel Stocks

Low—May Force Blowing in Stack—Ferroalloys Show Activity

FERROALLOY PRICES, PAGE 574

New York, Feb. 28.—Unless a furnace is blown in on spiegeleisen before long, there will be no stock of this metal available. Due to active buying over the past few weeks stocks now are at the vanishing point. The supply of 19 to 21 per cent was cleaned up some time ago. This now is the case with 16 to 19 per cent. Sales during the past week have been restricted to a few carloads of 14 per cent and the supply of this grade now is only a few hundred tons. The price realized on this grade during the past week is $28, furnace. Current inquiry for spiegeleisen is limited to carloads, but reports from steelmakers indicate supplies of the alloy at mills are being consumed at a more rapid rate.

The markets for the special ferroalloys have shown a little more life lately, February being considerably better than January for most of the producers. Prices have been practically unchanged. Fifty per cent ferrosilicon is quoted $56, delivered, to points east of Chicago while $55, delivered, has been quoted to eastern mills. Demand continues scattered and the consumers are buying principally for early requirements. Japanese demand for ferrovanadium has been fairly good, but European buying remains light. In this country, automobile steelmakers have been more active. Quotations are unchanged at $3.75 to $4 a pound contained. Ferrochrome quotations range from 10.50 to 11 cents a pound contained on foreign alloy 6 to 8 per cent carbon for importation, to 14 to 15 cents quoted by domestic makers quoted on less than carlots. Inquiry is light, although some consumers appear to have used up most of their supplies. The tungsten market continues dull, with quotations on standard alloy closer to 35 cents than to 40 cents a pound contained. Tungsten concentrates are quoted $2 a short ton unit. New Caledonian chrome ore is quoted $19 to $19.50 a long ton.

Russian Ore Sold

New York, Feb. 28.—A large tonnage of Caucasian 50 per cent manganese ore has been sold for early shipment from Russia. While the price was not announced, the seller of the ore now is asking 26 cents per unit tidewater on the same kind of material. The lowest current asking price on Brazilian manganese ore is 24 cents tidewater. The last price quoted by cable on Indian manganese ore, about a week ago, was equivalent to 26 cents per unit, tidewater, but it is believed that Indian ore could be had around 25 cents per unit.

Ferro and Spiegel Active

Pittsburgh, Feb. 28.—General activity in ferroalloys continues limited, but considerable improvement is noted in connection with ferromanganese and spiegeleisen. Sales of the two products are slightly more numerous and the several inquiries for each now before the trade are estimated to aggregate between 1500 and 2000 tons. The United Alloy Steel Corp. has not closed on its inquiry for 500 tons of ferromanganese. Other consumers want between 50 and 500 tons each. The American Steel Foundries' inquiry for 200 tons still is held in abeyance. Prices appear to be firm at $62.50, seaboard base. Recent sales substantiating that figure have involved from 50 to 200 tons each.

Recent activity in spiegeleisen, it is thought, may inspire the blowing in of a furnace in eastern Pennsylvania shortly to make that material. A British inquiry recently before the trade and understood to have been closed involved between 5000 and 10,000 tons and a Buffalo steel company is understood to have closed for considerably in excess of 1000 tons. The seller, desiring a backlog, is understood to have taken both of these orders at below $30, furnace, which now appears to be the fairly well established price on 16 to 19 per cent material. A sale of several hundred tons on that basis in Ohio is noted. A Cleveland interest was in the market for 300 tons while Youngstown and Massillon, O., consumers wanted up to 700 tons each.

Efforts to obtain higher figures on 50 per cent ferrosilicon have not been accompanied by much success and the market remains quotable on the basis of $54 to $60, freight allowed. The McConway & Torley Co. is understood to have closed on its carload of the 15 to 18 per cent grade at a figure below $41, Pittsburgh. The Reliance Steel Castings Co. is reported not to have closed on its carload of 10 to 12 per cent. Recent sales of ferrovanadium have involved 600 pounds, 1100 pounds and other similar amounts at $3.75 to $3.95 per pound.

Stimulates Buying

Philadelphia, Feb. 28.—The continued rise in sterling exchange with consequent expectations that British ferromanganese makers will advance their price again is resulting in a much improved buying movement. Sales during the past week by importers and eastern producers aggregated at least 1000 tons, all at $62.50 tidewater. Most of this business involved single carloads but included was one lot of 200 tons and another of 100 tons.

Carload Sales Reported

Buffalo, Feb. 28.—Sales of several carloads of ferromanganese are reported here. Inquiries are out now for five carload lots.

Pipe Orders

Continue at Fair Rate Although Demand Declines—Shading Done

PIPE PRICES, PAGE 574 AND 640

Pittsburgh, Feb. 28.—Tubular goods manufacturers witness a falling off in the demand for large tonnages although the inflow of orders for full weight standard pipe, oil well casings, etc., continues more or less steady. Such orders as are coming out are for small amounts but the aggregate is sufficiently heavy to maintain pipe mill operations on approximately a 60 per cent average basis. Although occasionally concessions of an extra 2½ or 5 per cent are granted, these largely are special arrangements and indicate no general trend downward in the market as it is gaged

by the Dec. 15 cards. Jobbers continue to buy to keep well balanced stocks and no particularly large tonnage is current in either inquiries or orders from that direction.

In wrought iron pipe, some inquiries come out but not all turn into orders. The aggregate business for January as well as for February compares favorably with October of last year which was the best month in 12 or more for the wrought iron pipe makers. These state that progress is being made in developing new lines, including oil country goods, mill tubing and drill pipe. Prices are unchanged.

Demand Is Steady

New York, Feb. 28.—Demand for cast iron pipe is coming out in steadily increasing volume. While few new municipal tonnages are noted, private inquiry includes a number of substantial tonnages, and sellers generally are firm in their offerings. Export inquiry is maintained but is resulting in little actual business.

The water department of New York city will open bids March 9 on approximately 1000 tons of miscellaneous sized pipe, while the city of Newburg, N. Y., will open bids on 1200 tons March 1.

Lull in Western Buying

Chicago, Feb. 28.—With the exception of the city of Chicago, which opened bids yesterday on 1350 tons of cast iron pipe, on which no award has yet been made, western cities are not inquiring for or buying as much pipe as had been expected. The Central Foundry Co. has been awarded 150 tons at Fort Wayne, Ind., and the National Cast Iron Pipe Co. has taken 250 tons at Moulton, Iowa. Bids will be opened March 2 at Fremont, Neb., on 325 tons. While the kind of pipe has not been decided the city of Astoria, Oreg., is to construct 11 miles of water line. On March 1 Seattle will receive bids for 9500 feet of 14-inch wood, steel or cast iron pipe to be used in improving the city's water system, and on March 9 bids for materials and labor for reconstruction of 5 miles of 18-inch and 24-inch cast iron water pipe leading to the Schofield barracks reservation will be opened at Honolulu.

Lettings More Frequent

Birmingham, Ala., Feb. 27.—Cast iron pipe production in this district will be steadier and in greater volume from now on as lettings are more frequent. A number of contracts have been booked in the last few days and bids are out on considerable tonnage. Operations at the high pressure plants are increasing also. Quotations have not been changed lately and there are no prospects of further reductions in the near future. Soil pipe plants report trade off a little, weak quotations causing some hold up in activity.

Hoop Demand Is Small

HOOP PRICES, PAGE 574

Pittsburgh, Feb. 28.—Orders for hoops and bands are small but represent a fair aggregate. Users continue to order for needs and less-than-carload orders are fairly numerous. Some of these for hoops are filed with other specifications on hot-rolled strip steel to make up a carload and some on bands come with specifications for bars, similarly proportioned. Straight carloads, however, are slightly more numerous the past two or three weeks than formerly. Prices on hoops, if anything, are weaker, individual quotations being named depending solely upon the aggregate of the specifications. While 2.00c, base Pittsburgh, has not entirely disappeared, 1.80c and 1.85c are heard more often than two weeks ago. Bands continue to be quoted at 1.70c to 2.00c, base Pittsburgh.

The Nonferrous Metals

Copper and Tin Change Most with Upward Tendency After Low Point—Zinc Gains a Little

	Copper Electro delivered	Copper Lake delivered	Spot Straits New York	†Lead New York basis	Zinc St. Louis basis	Spot† aluminum	Spot antimony	Nickel spot
Feb. 22.....				Holiday				
Feb. 23.....	12.87½	12.90	29.75	4.70	4.50	17.50	4.40	35.00
Feb. 24.....	12.87½	13.00	30.00	4.70	4.50	17.50	4.35	35.00
Feb. 27.....	13.00	13.00	31.00	4.70	4.50	17.50	4.35	35.00
Feb. 28.....	12.87½	13.00	29.87½	4.70	4.55	17.50	4.35	35.00

†Open market quotation.

NEW YORK, Feb. 28.—The copper and tin markets have furnished the principal interest and most of the price changes of the past week, among the more important nonferrous metals, due largely to the movements of the foreign markets.

Electrolytic copper prices declined to 12.75c, delivered, on one or two sales the latter part of last week, but on Feb. 27, a heavy inquiry for export to France, Germany and Great Britain was received in New York and a considerable tonnage was sold. Domestic interest also revived and prices recovered about ¼c. The price quoted by producers was 13c, delivered, and in some cases higher, while in the outside market 12.87½c refinery, was asked. But today the market slipped back ⅛c. The statistical position of copper continues to improve and is expected to do so for at least 60 days more, as it will be at least that time before any important additional refined copper will be coming on the market. Casting copper makers advanced their quotation to 12.62½c, refinery, but have little metal for sale, due to their recent good export bookings. Lake copper is quoted 13c, delivered.

The zinc market has held steady at 4.50c until today and then went to 4.55c E. St. Louis, 4.85c New York. The steady rise in sterling exchange, to the new high of $4.44 on Feb. 27, together with the continued strength of the London zinc market, due to light stocks in Great Britain, has brought the London quotation close to 5c in our money, or nearly to a level which would permit export business from this country. Demand here is light.

Business in lead continues to consist of steady though moderately sized purchases, with prices little changed, 4.70c to 4.75c, New York, 4.40c East St. Louis. Consumption still is balancing production.

The decline in the London tin market, which brought quotations there to a new low level since 1914, about £140, came to a close Feb. 23, when there was a slight recovery, which continued over the next three business days. This recovery was believed to mark the end of the liquidation by Dutch interests and the covering by short interests. The rise in sterling exchange assisted in increasing the import cost of tin here, so that prices steadily rose throughout the past week, to 31c for spot Straits tin Feb. 27, and 30.50c for importation. Today the market was off slightly.

Demand for antimony has continued to lag, with offerings at 4.35c to 4.40c, duty paid. For importation, 4c in bond has been quoted, but this price probably could be shaded.

Mill Products

(Base prices, f.o.b. mill)

SHEETS	
Copper, hot rolled 24 oz., min....	20.25
High brass	16.25
Zinc, ga. 9 to 18 (plates ½c less)	8.00
Lead, full sheets (cut ¼c more)..	7.25
SEAMLESS TUBES	
High brass	18.00
Copper	20.75
RODS	
High brass, round, ½ to 2½ inch	14.25
Naval brass rod.....	17.25
WIRE	
Copper	14.75 to 15.25
High brass	16.75

Old Metals

(Dealers' Buying Prices)

HEAVY RED BRASS	
Cleveland	8.00 to 8.50
New York	7.50 to 7.75
HEAVY YELLOW BRASS	
New York	5.50 to 5.75
Chicago	5.25
Cleveland	5.00 to 5.50
ZINC	
New York	2.50 to 2.75
Cleveland	2.00 to 2.25
Chicago	2.00 to 2.50
HEAVY COPPER AND WIRE	
Cleveland	10.00 to 10.50
Chicago	9.50
New York	10.25
RED BRASS TURNINGS	
New York	7.00 to 7.25
Cleveland	6.50 to 7.00
Chicago	6.00
YELLOW BRASS TUBING	
Cleveland	4.50 to 5.00
NO. 1 BRASS ROD TURNINGS	
Cleveland	4.50 to 5.00
New York	5.00 to 5.25
Chicago	4.50
ALUMINUM BORINGS	
Cleveland	4.00 to 4.25

Jones & Laughlin To Keep Up Barge Service

A. B. Shephard of the Jones & Laughlin Steel Co., Pittsburgh, appeared March 1 before the National Rivers and harbors congress in session in Washington and described the service his company inaugurated last October in delivering steel products in barges via the Ohio and Mississippi rivers to its customers in Ohio, Kentucky, West Virginia, Indiana, Missouri, and other points. He stated that the average saving to the consumer of products delivered by barge has been between $2 and $2.50 per ton, as compared with all rail rates. He declared further:

"It is the intention of the Jones & Laughlin Steel Co. to establish this service on an efficient and permanent basis, and to continue it as a factor in the general service offered to its customers. Efforts will be made to arrange for delivery of products to points at still greater distances from Pittsburgh and also for export through New Orleans. It is believed that this business will amount probably to 50,000 tons or more during the present year and within a short time, if the proper facilities are provided, it will be moving at the rate of 100,000 tons or more per year. It is not unreasonable to expect that the last named amount will in time, more nearly represent a monthly shipment instead of a yearly shipment."

Mr. Shephard pointed out the various delays that had been encountered, particularly in the matter of unloading, and said that after proper facilities are provided, shipping time will at least equal if not better the present rail time.

Discuss Steel Cost Suit

Washington, Feb. 28.—Conferences were being discussed here today by Col. William Chantland, for the federal trade commission, and Judge A. Leo Weil, of Pittsburgh, and Levi Cook, of Washington, for the iron steel and coke producers in the Claire Furnace cost reporting suit, in regard to further arguments in the case. It is expected that tomorrow, before Justice Jennings Bailey of the district supreme court, arguments will be heard on the motion of the producers to strike out the entire amended answer of the commission. Not until these arguments have been heard and disposed of can the trial of the case on its merits be begun.

Warns of German Plans

Warning that Germany is making amazing progress in standardization, as a link in the chain of industrial processes by which she aims to become again a power in world trade, E. C. Peck, of Cleveland, chairman of the standardization committee of the American Society of Mechanical Engineers, urges American industrial leaders to take up a comprehensive program of standardization and to give serious study to Germany's plans. Billions of dollars can thus be saved by American industry, according to the verdict of the committee expressed in a survey of engineering and industrial standardization.

Yards Can't Scrap Ships

Washington, Feb. 28.—Secretary Denby has informed the American Federation of Labor it will be impossible to scrap obsolete warships in navy yards, to provide work for furloughed employes, because of the lack of funds. He also went on record as opposing turning navy yards into manufacturing plants, saying:

"Should such plan be adopted and the yards converted into industrial instead of navy plants it is difficult to see how the national employment situation will in any way be alleviated even if it is found feasible to compete in the open market with industrial plants on the outside. As to this I have very serious doubts for I know of no industrial plant in private life where such liberality is shown employes, thereby increasing the overhead, as in the navy yards of the United States."

Favors Screw Thread Body

Washington, Feb. 28.—Senator Atlee Pomerene, acting for former Senator W. S. Kenyon, has made a favorable report for the senate manufacturers committee on the Tilson joint resolution extending the life of the national screw thread commission five years from March 21. No amendments were proposed, and it is presumed that the resolution will meet with no opposition on the floor of the senate.

Trade Funds Are Larger

Washington, Feb. 28.—Of the $18,500,000 appropriated by the house for the department of commerce for the fiscal year beginning next July 1, $1,533,410 is for the bureau of foreign and domestic commerce. To promote commerce with South and Central America $170,000 has been set aside, which is $70,000 more than this year. To stimulate trade with the Far East $166,150 has been granted, or $16,000 more than this year. For the department of labor the house has appropriated $6,800,000. A motion in the house to cut the appropriation of the federal employment service from $225,000 to $100,000 was lost.

Decree Cleans Up Labor Tangle in Building

Washington, Feb. 28.—Federal officials believe the decree just entered by mutual consent in the case of the department of justice against the brick layers', plasterers' and masons' international union marks the greatest step forward in years in industrial relations in the building industry. This decree ends the prosecution of the union officials. It lifts all restrictions on productive capacity of individual work, provides that employers may purchase material where they choose, whether or not union-made; states that labor organizations must not be used by material men or contractors as means for collecting claims, and bars any favoritism by labor against employers or trade associations, or vice versa. Part of this decree is against the American Federation of Labor rules.

Settle All But 31 Claims

Washington, Feb. 28.—When the war department war claims board goes out of existence tomorrow only 31 claims out of a total of 30,000 will remain undisposed of, according to Assistant Secretary Wainwright. The remaining claims will be handled by the regular claims machinery of the war department.

Feels Farm Depression

Depression in the farming sections is reflected in the annual report of Deere & Co., Moline, Ill., for the year ended Oct. 31. This shows a loss of $2,752,801 for 1921 against net income of $4,636,717 in the previous year. Sales last year dropped 63 per cent from 1920, but it was said expenses could not be reduced in proportion. Factories with one exception were closed during the late winter and spring of 1921. During the war period the company created a reserve fund of $9,409,733 against anticipated inventory shrinkage Against this reserve there has been charged off $6,317,059. The loss from operations plus the inventory charges amounted to $9,069,860.

In his remarks to stockholders President Butterworth, of the company, says that owing to the present business conditions and to the fact that for some years at least the farmers will require longer credits, the company deemed it advisable to fund $10,000,000 of its current indebtedness into 10-year gold notes. Recovery, dependent as it is upon equable adjustment of price relationships and upon crops, cannot be immediate, he thinks. Nevertheless given fair crops, recovery is possible.

Coast Buying Is Held Up

Expected Freight Cut Guides Trade—Outstanding Sale of Pig Iron Is for 500 Tons—Most Prices Are Firm

Staff Correspondence

LOS ANGELES, Cal., Feb. 23.—Trading in the local market for iron and steel products is, for the most part, confined to small tonnages for prompt delivery. Many consumers are of the opinion that reductions in freight rates are not far distant and as a consequence are buying only for what they have actual need. Stocks, generally, are low. Consumers in this district seem little perturbed over the impending coal strike scheduled to take place April 1.

Pig Iron and Coke

Sales of pig iron have not been heavy, carlots being the general rule. For the time being, at least, southern iron is being quoted at prices under those for foreign material. Dealers handling the foreign iron are asking $30 to $31 for carload lots and it appears that $29 c. i. f. is the best price obtainable on even the most desirable tonnages. Southern iron, on the other hand, can be obtained as low as $25 c. i. f. Pacific coast ports. Now it is possible to secure a $5.75 per gross ton water rate from New Orleans to Pacific ports, which with the rail haul from Birmingham to New Orleans of $2.75 per ton makes a total of $8.50 per ton. The outstanding sale of the week was one lot of 500 tons of basic for a local interest. This was originally placed with an English furnace but was not accepted and a few days later was placed with an Atlantic seaboard furnace at a price understood to have been $29 c. i. f. San Pedro. Foundry interests, for the most part, are inclined to regard the impending coal strike lightly and are making no preparations for securing an emergency supply of raw materials. As far as can be ascertained only one interest in this district realizes the seriousness of the situation and has placed orders for over 1500 tons of southern iron and a quantity of coke. Requirements for this year will be stocked in their yard before April 1.

Bars, Plates and Shapes

No improvement is noted in the demand for merchant steel bars. Orders are being received by the local mills but small tonnages and mixed lots are the rule. No outstanding awards were made during the past week for reinforcing bar material. Several projects, involving fair sized tonnages, are on the architects' boards but are being held up for various reasons.

While plate purchases are increasing in number, practically all of them are limited to small requirements. One local interests reports the purchase of 115 tons of Belgian plates at 1.90c c. i. f. San Pedro. Generally, the plate market here on attractive lots may be quoted at 1.50c base Atlantic seaboard.

Numerous projects are nearing the point where bids will be asked for structural shapes. Fabricating shops are being kept busy on work involving small tonnages.

Other Finished Material

Consumers of sheets have not as yet come into the market with any heavy specifications. Since the first of the year only one sizable inquiry has been reported. This involved approximately 500 tons of corrugated galvanized sheets and it is understood a portion of it has already been placed. In spite of the fact that many sheet mills have opened their books for second quarter delivery at unchanged prices many local buyers are holding off because they believe lower prices will be obtainable shortly. Prices are fairly firm at 3.00c and 4.00c for black and galvanized sheets respectively.

Wire and wire products specifications are coming in at a good rate, with nails most in demand. While some shading is reported occasionally it is thought that the market may be considered fairly firm at 2.25c for plain wire and 2.50c base Pittsburgh for nails.

Oil country pipe is probably the most active in this section at present and good tonnages are reported being placed right along. Considerable activity in the building trade is resulting in a better volume of orders coming in for pipe for this class of work.

Scrap Material

Purchases of melting steel during the past week eased off following a period of heavy buying. Not over 500 tons changed hands during the week. Prices remain unchanged at from $9 to $10 per ton delivered. Cast scrap is moving in small tonnages only. The price has stiffened somewhat.

Chinese Pig Iron

Undersells Coast Product—1650 Tons of Scrap Sold—Prices Hold

Seattle, Feb. 23.—Logging and lumber industries continue to furnish most of the business for iron and steel dealers in this territory. Repair material and machinery equipment are in demand and wholesalers take an optimistic view of the situation. Export ing houses state that they are confirming only small tonnages in the Orient most of this business evidently being placed in eastern centers. New construction and improvement projects continue to develop and the situation is more hopeful than in months.

Pig Iron and Coke

Some Chinese pig iron arrived recently, the amount being about 200 tons. This is reported to be selling at considerably under the market between $23 and $25. This iron is low in phosphorus, analyzing only about .08 but in other respects it grades well. Southern pig iron, with lower prices at base, it is expected will become a factor in this market provided sufficiently low water freights are obtainable. A recent consignment was discharged at Los Angeles and San Francisco but none of it has come north. According to reports it is selling at around $30. The market for pig iron is quiet as the foundries are buying only sparingly. Stocks are low and orders for foreign iron are going forward for delivery in about 60 days. Prices on foreign pig iron are between $30 and $31.

No change is evident in the coke situation. The initial shipment by water of 500 tons of Connelsville has arrived. Some of it has been sold at $18 but according to reports this consignment was not up to the usual quality.

Bars, Plates and Shapes

Bars and plates are in good demand while there is also some movement of shapes. Building and highway construction is calling for reinforcing bars while general repair work has created a demand for other specifications.

Other Finished Material

A syndicate of local junk dealers purchased at auction a quantity of material sold by the Grays Harbor Motorship Corp. This included 700 tons of steel bars and rounds, 700 tons of flats, 200 tons galvanized bolts, 150 tons galvanized ship spikes and 100 tons of black ship bolts.

The municipality is considering the purchase of 200 new one-man street cars for the use of the city car lines.

Bids for furnishing cast iron pipe, flexible joints, hydrants, etc., where received by the city and under consideration.

Old Material

Prices for scrap are stationary but stocks are low and increased demand would undoubtedly send prices up. In some instances foundrymen have purchased beyond their immediate needs believing that the market is at the bottom. During the week only small tonnages of scrap have moved. Foreign inquiries are few.

Due to rising exchange and increased production costs foreign iron and steel are finding it difficult to compete in this market. The agent of a foreign manufacturer states that it is almost impossible to place business here. He quotes prices of steel rails delivered here of $45 and steel bars 2.00c base.

The largest metal cargo to come to the Pacific coast has arrived on the shipping board steamer HANLEY which brought 9600 tons of tin plate from Atlantic ports. Five hundred tons of the shipment was discharged at Los Angeles, 5000 tons at San Francisco and the balance is consigned to Seattle and Tacoma.

Operators of iron foundries state that conditions are quiet and no immediate improvement is seen. Steel foundries are fairly busy, some plants working overtime. They are catering largely to the lumber industry, several foreign orders having been placed in this territory. There is also a demand for hoisting equipment.

Eastern Roads Plan Ore Rate Cut

May File Tariffs for 28½ Per Cent Reduction To Be Effective Coincident with Opening of Traffic on Great Lakes—Coal and Coke Rates Also May Be Lowered—Fuel Loading Heavier

WASHINGTON, Feb. 28.—The freight rate situation as it affects the iron and steel industry has again reached the point where it is understood railroads in eastern territory are about to file new tariffs on iron ore removing the 40 per cent advance of August, 1920. The proposal is to decrease ore rates about April 1, coincident with the opening of navigation on the Great Lakes and the expected pronouncement of the commerce commission following its general rate investigation. As the commission is expected to reduce coal rates if it lowers any rates at all, there is the possibility that coke and other iron making material freights also may come down.

The tariffs which the commission has been informally notified will be filed, are to call for a reduction of 28½ per cent, making the rates exactly those that obtained prior to the 1920 advance, and are to become effective on the statutory 30 days' notice. Those ore rates which were reduced for two months last October will not be affected in the proposed reduction. Some disagreement has arisen between the carriers as to divisions of rates on ex-lake ore but these differences are not expected to do more than retard the movement a few days at the outside. Whether dock charges will be affected is not known.

Counsel for the lake front blast furnace interests at Buffalo who were instrumental in having the reduction of last October revoked on Jan. 1, are watching the situation closely. Provided coal and coke are reduced proportionately, no objections will be entered. If ore rates solely are to come down, then the commission will be asked to suspend the new tariffs. To an extent the Buffalo furnace interests believe their case will be aided by the filing of new ore tariffs, as they contend that in principle the conditions making possible reductions in ore rates can likewise be marshalled in favor of reductions in coal and coke rates, it is said.

On last Oct. 28 the railroads in eastern territory lowered ore rates 28 per cent, effective for the remainder of the year. But when the carriers sought to extend the lower rates through the first quarter of 1922 the Buffalo interests objected. Following this victory, the Buffalo interests filed formal complaint seeking reductions in coal and coke rates and the establishment of minimum rates on ex-lake ore. The American Steel & Wire Co., Cleveland, has since intervened on the ground that whatever reductions in fuel are made applicable to Buffalo should be made applicable also to Cleveland. To the formal complaint, seeking maintenance of the relationship between the interior and lake front interests the railroads have filed their formal replies but a date for the hearing has not yet been set.

Coke and ore loading by the carriers has been low but coal loading has almost doubled in less than two months while, taking revenue loading as a whole, the carriers are now doing their heaviest business since last November. Ordinarily, too, the rebound in loading does not set in until late March. In recent weeks the revenue loading of the carriers, by carloads, has been as follows:

Week ended	All freight	Coal	Coke	Ore
Feb. 11.....	788,412	192,167	7823	4015
Feb. 4.....	753,886	181,151	7844	4015
Jan. 28.....	743,728	180,966	7502	4007
Jan. 21.....	738,275	164,091	7267	4269
Jan. 14.....	720,877	159,245	7258	4451
Jan. 7.....	605,992	136,982	7008	4321
Dec. 31.....	531,034	105,662	6424	4883
Dec. 24.....	665,927	135,852	7140	5489
Dec. 17.....	727,003	134,842	7145	5535
Dec. 10.....	742,926	137,836	6638	6128

A good share of this augmented traffic can be attributed to the prospect of a coal strike April 1. Compared with a year ago, the freight loading of the week ended Feb. 11 was slightly over 100,000 carloads more than in the same week of 1921. With increased loading the number of surplus cars has dwindled until in the period Feb. 8-15 the daily average surplus was 278,481. In the period Feb. 1-8 the surplus was 296,659, and in the period Jan. 23-31, 330,681.

In the complaint of the Gulf States Steel Co., Birmingham, Ala., against the Louisville & Nashville and other railroads the commission has ruled that failure of the defendants to move inbound and outbound cars between interchange tracks and points within the steel company's plants, or to compensate the steel company therefor, did not result in unreasonable expense to the steel company, and dismissed the complaint. Another decision of the commission finds the Ore Carrying Corp., operating in the Port Henry, N. Y., ore district, a common carrier and as such eligible to receive divisions of joint interstate rates from its trunk line connections.

On March 4, at the request of the shipping board, Chairman McChord, of the interstate commerce commission, and Commissioners Hall and Potter, will preside at the reopening of the export bill of lading case. Amendments have been proposed by the shipping board to the form prescribed by the commission on Oct. 21, 1921. Oral arguments will be barred at the close of the hearing and interested parties are asked to submit briefs. The commission has not yet announced a date for beginning its proposed investigation of class rates to, from and within southern territory. March 2 to 4 has been set aside by the commission for rebuttal evidence by the carriers in the general rate investigation, and March 8 to 11 for oral closing arguments.

An additional year is granted for the filing of claims against the railroad administration by a bill just passed by congress. The original period for action growing out of federal control of the railroads expired today.

The Supreme Court decision Monday in the New York-Wisconsin rate cases, giving the interstate commerce commission board power over intrastate rates, prompted a statement today by counsel for the state railroad and utility commissions that efforts will be redoubled for the passage of bills now in congress for revoking the commission's intrastate powers. The decision makes the commission more powerful but it likely will have little effect on rates as the August, 1920, rate advance was based upon the same increases in intrastate rates as the commission ordered in interstate tariffs at that time.

More Belgian Stacks In

Washington, Feb. 28.—On Feb. 1 acting Commercial Attache Cross at Antwerp cabled the department of commerce that 18 Belgian blast furnaces were active compared with 15 on Jan. 1. Production on Feb. 1 amounted to 646 tons of foundry iron and 2470 tons of basic. This increased production has had a softening effect upon prices, pig iron having dropped 10 francs per ton in the past three weeks, billets and sheet bars 50 francs, steel bars 30 francs and open-hearth steel one franc per kilo. The Sambe et Moselle works is reported to have received an order for 40,000 tons of rails from Argentina, while the Usines de la Providence has taken an order for 32,000 tons from Brazil. Holland and Bulgaria also are reported to have done some rail buying recently in Belgium.

Welsh Tin Plate Sales Shrink

Mill Operators Now Down to 50 Per Cent, with No New Orders from Japan—Black Sheets Offered at 2.06c, Mill—Hematite Pig Iron Advanced on Strength of Export Demand—Coke Prices Increased—Continental Markets Dull

The Iron Trade Review Staff Cable

European Headquarters,
THE IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

Sterling—$4.43

LONDON, Feb. 27.—Orders for tin plate are falling off, and operations at Welsh mills are down to 50 per cent of capacity. Small sales are being made for the second quarter at 18 shillings ($3.98) f.o.b., per base box, mainly to the continent and South America, there being no new orders from Japan. Black sheets are again lower, equivalent to 2.06c, mill, a figure slightly competitive with the price of American material.

Moderate export sales of hematite pig iron have resulted in a small advance in the price quoted by East Coast producers. Some additional foundry inquiry is in the market, while Midland and Scotch pig iron is again lower. Coke has advanced 2 shillings ($0.44) on account of continued export business, this hampering the recovery in output of British pig iron.

Prices of billets are weak. Demand for finished steel is less urgent, consequent to attempts to boost the home price. Continental markets are dead. Lorraine producers are worried over advances in coke prices. Belgian, Luxembourg and German shapes and bars are offered at £8 ($35.44) f.o.b. Antwerp.

German Demand Features British Export

European Staff Correspondence

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,

Sterling—$4.30

MIDDLESBROUGH, England, Feb. 16.—A noticeable feature of the iron and steel export business is the improvement in the demand from Germany. Though the deliveries called for only amount to only a few thousand tons in comparison with Germany's prewar requirements it is a welcome sign of expansion from the British exporter's point of view. The change is all the more noteworthy when it is recalled that for the three months, September, October and November last, the United Kingdom imported 121,700 tons, 94,300 tons and 99,900 tons of pig iron respectively, compared with the monthly average of 18,000 tons in 1912-13.

The renewal of German demands may, according to Roland Woods of the National Federation of Iron and Steel Manufacturers, "be regarded as an indication that not only are we ceasing to be importers of pig iron to any extent, but that we are starting again to export to the continent.

"Competent critics in the iron and steel trade have never, even when the outlook was blackest, lost sight of the fact that German capacity for the production of iron and steel was seriously impaired by the territorial changes effected under the treaty of Versailles," said Mr. Wood. "Where Germany produced 19,000,000 tons of pig iron in 1913, only 12,000,000 tons of this was produced within her present boundaries. It would not be surprising, in view of this loss, if Germany tended to become an importing country as regards pig iron."

Germany during January took an increased quantity of pig iron and Belgium, Italy, and France have been steady buyers. During January the shipments of iron and steel from Middlesbrough were double the monthly average of 1921. The total deliveries for the month, 74,887 tons, is the largest quantity shipped in any month since July 1920. Though the shipments of manufactured iron and steel are approximately 4000 tons less than in December they totaled 43,622 tons. India continues the largest buyer taking 3735 tons of manufactured iron and 16,223 tons of steel.

Coastwise deliveries show an increase of 1974 tons compared with December. Scotland has received over 3000 tons of pig iron and to Wales 7650 tons were sent. The details of deliveries and the destination of the material exported from Middlebrough in January is as follows:

Destination	Pig iron, tons	Manufactured iron, tons	steel, tons	Total tons
Coastwise				
East Scotland	3,074	..	....	3,074
Wales	7,650	..	....	7,650
Other ports	750	46	3168	3,964
Total	11,474	46	3168	14,688
Colonial and Foreign				
Argentina	....	1	4,203	4,204
Belgium	4,940	..	22	4,962
British East Africa	....	..	1,535	1,535
Ceylon	19	17	120	156
China	....	46	735	781
Cape Colony	....	..	228	228
Denmark	630	..	....	630
Egypt	....	2	584	586
France	4,495	..	17	4,512
Germany	1,170	..	....	1,170
Holland	220	..	222	442
Hong Kong	....	..	648	648
Italy	4,832	..	10	4,842
India	1,012	3735	16,223	20,990
Japan	850	..	2,439	3,289
Mauritius	....	591	3	594
Morocco	....	..	15	15
Malta	....	4	....	4
Norway	100	..	....	100
New South Wales	153	26	289	468
Nigeria	....	..	3,250	3,250
Natal	....	4	1,539	1,543
Portugese East Africa	....	19	194	213
Queensland	....	25	1,054	1,079
Russia (Pacific)	....	..	20	20
Switzerland	1,000	..	....	1,000
Spain	10	..	2	12
Sweden	195	1	....	196
Straits	115	106	977	1,198
Siam	50	..	194	244
South Australia	....	..	331	331
Transvaal	....	..	11	11
Uruguay	....	5	24	29
Victoria	....	..	798	798
West Australia	....	..	119	119
Total	19,791	4602	35,806	60,199
Grand total	31,265	4648	38,974	74,887

There are 27 furnaces in operation on the northeast coast, seven producing Cleveland foundry, four basic, three ferromanganese, one spiegel and the remainder East coast hematite. A cut of 10 shillings ($2.75) per ton was made in pig iron prices early in January in order to meet overseas competition which appears to be now a lesser factor. Pig iron producers however still affirm that they cannot manufacture iron at the lower costs it is being produced on the continent.

The finding presented to the board of conciliation for the manufactured iron and steel trades for the North of England also carries a reduction in puddling and mill workers wages. Since August last, there have been

Current Iron and Steel Prices of Europe

British Market

Home Market Prices. Gross Tons at Works or Furnace.

Corrected to Date by Cable

	$	£ s d
SEMIFINISHED STEEL		
Billets, soft steel	28.80	6 10 0
Sheet bars	29.90	6 15 0
Wire rods	39.87	9 0 0
FINISHED STEEL		
Steel bars, England, ½ to 3-inch	39.87	9 0 0
Ship, bridge and tank plates, England	42.09	9 10 0
Ship, bridge and tank plates, Scotland	42.09	9 10 0
Beams, England	42.09	9 10 0
Beams, Scotland	42.09	9 10 0
Sheets, black, 24 gage	46.52	10 10 0
Sheets, galvanized, 24 gage	66.45	15 0 0
Rails, 60 lbs. and over	33.23	7 10 0
Tin plate, base box, 108 lbs.	3.99	0 18 0
Steel hoops	48.73	11 0 0
PIG IRON		
Hematite, East Coast, Mixed Numbers	21.04	4 15 0
Hematite, West Coast, Mixed Numbers	21.82	4 18 6
Middlesbrough Basic	20.49	4 12 6
No. 3 Foundry, Middlesbrough	19.94	4 10 0
No. 3 Foundry, Derby, Leicester, Nottingham	18.27	4 2 6
No. 3 Foundry, Northamptonshire	17.72	4 0 0
No. 3 Foundry, Staffordshire	18.83	4 5 0
No. 3 Foundry, Scotch	22.15	5 0 0
Ferromanganese, 76 to 80 per cent.	66.45	15 0 0
COKE		
Yorkshire furnace	4.65	1 1 0
Yorkshire foundry	6.65	1 10 0

French Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Hematite, Lorraine	36.64	400
Basic Bessemer, Lorraine	21.98	240
Foundry, Longwy, No. 3, sand-cast	20.61	225
Foundry, Longwy, No. 3, chill-cast	22.44	245
Foundry, Longwy, No. 2, sand-cast	21.98	240
Foundry, Longwy, No. 2, chill-cast	23.36	255
Ferromanganese, 76 to 80 per cent.	86.56	945
COKE		
French furnace	7.33	80
*German, Belgian and British furnace	5.95	65
French foundry	12.37	135
SEMIFINISHED STEEL		
Blooms	33.89	370
Billets	36.18	395
Sheet bars	38.47	420
FINISHED STEEL		
Standard rails	50.38	550
Merchant bars	43.97	480
Angles	43.51	475
Normal beams and profiles	43.51	475
Plates, ship and tank, 10 millimeters and thicker	60.46	660
Plates, bridge and tank, 5 to 10 millimeters	65.04	710
Sheets, black, 3 millimeters	75.11	820
Sheets, blue annealed, 2 millimeters	96.18	1050
Shafting, cold-drawn, 40 to 60 millimeters	73.28	800
Bars, 2 per cent nickel steel	100.76	1100

*F.o.b. frontier points.

All prices are f.o.b. furnace or works.

Belgian Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Basic bessemer, Belgian	21.36	245
Basic open-hearth, Belgian	22.67	260
Gray forge, Belgian	22.24	255
Foundry, No. 3, Belgian	22.67	260
Foundry, No. 3, Luxemburg	22.24	255
Foundry, No. 3, Lorraine	22.67	260
SEMIFINISHED STEEL		
Blooms	30.52	350
Billets	32.70	375
Sheet bars	35.32	405
Wire rods	43.60	500
FINISHED MATERIAL		
Standard rails	45.78	525
Merchant bars	36.62	420
Normal beams and profiles	36.19	415
Plates, 5 millimeters and thicker	44.04	505
Sheets, black, 3 millimeters	49.70	570
Sheets, galvanized, 1 millimeter	128.62	1475
Plain wire	61.04	700
Galvanized wire	74.12	850
Wire nails	44.91	515

All prices are f.o.b. furnace or works.

German Market

Prices Last Reported

	$	Marks per metric ton (2205 lbs.)
PIG IRON		
Hematite, Oberhausen	17.71	3979
Foundry, No. 3, Oberhausen	15.00	3371
Bessemer Stahleisen, Siegen	16.22	3644
COKE		
Ruhr furnace coke	3.04	683
Ruhr foundry coke	3.16	710
SEMIFINISHED STEEL		
Billets	18.91	4250
Sheet bars	20.03	4500
Wire rods	20.03	4500
FINISHED STEEL		
Standard rails	22.25	5000
Merchant bars	25.37	5700
Structural shapes	24.48	5500
Ship plates	27.68	6220
Medium plates, 3 to 5 millimeters	31.60	7100
Sheets, below 3 millimeters	37.83	8500
Tin plate	91.23	20,500
Plain wire	26.70	6000
Bands and strips	32.49	7300

All prices are f.o.b. furnace or mill.

reductions as follows: August, 25 per cent; October, 10 per cent; December, 20 per cent; and February, 20 per cent.

The average net selling price of bars and angles for the two months ended Dec. 31 was £13-12- 10.43d. The average selling price of bars was £13-12- 11-98d. and angles £13-1- 2.42d.

The Steel Ingot Makers' association and the North of England Iron and Steel Manufacturers' association's latest steel sliding scale adjustment shows a reduction of 33¼ per cent, which is equal to 27 "steps." This went into effect Feb. 5.

In addition to this cut in the wages of steelworkers, a decrease of 10s. 8½d. is involved for bricklayers' laborers employed in the steelworks. For a 48-hour week their wages will now be about £2 8s. representing a drop of £2 in 12 months.

French Prices Moving Up; Few Sales

European Staff Correspondence

PARIS, Feb. 16.—The outstanding events pertaining to iron and steel are the strike of the railroad employes in Germany and developments in the plans for a selling syndicate among iron and steel producers in allied countries. As a result of the strike deliveries of German coke practically ceased and much anxiety is felt in Lorraine and other eastern production centers as to the consequences on French

Franc—$0.086

production of pig iron and steel.

With reference to the proposed selling agreements between allied steel producers it seems essential that the home producers in the countries interested should come to an understanding before an international agreement can be successfully concluded. From present indications it appears that Great Britain presents a united front. French interests have not yet reached an accord but the reorganization of the Comptoir Siderurgique is progressing favorably, and it is expected that the difficult question of allotment of tonnage to the participants will soon be solved. It is interesting to note that the estimated production of French pig iron and steel approximates 11,000,000 tons annually and as this greatly exceeds domestic consumption it is obvious that an outlet must be found in foreign markets. Germany has not as yet been invited to take part in the conferences, it is understood.

The upward tendency in prices of pig iron and semifinished products has not stimulated buying, and the increase will probably continue for some time owing to the anticipated rise in the cost of coke. The British market is practically closed to French products. Producers are not eager to bind themselves to long contracts in view of uncertainty with respect to coke and other materials.

The price of French metallurgical coke is still fixed at 80 francs ($6.88) per metric ton, to which must be added freight to consuming points.

Large orders for pig iron have given way to small inquiries. No. 3 foundry chill-cast is quoted at an average of 245 francs ($21.07) although lower prices can be obtained on attractive business. No. 2 chill-cast has been quoted as high as 287.50 francs ($24.72). Middlesbrough may soon become a serious competitor if sterling exchange continues its present downward movement. Hematite is not much in demand although production tends to increase. The comptoir still quotes 400 francs ($34.40) but concessions are made to meet foreign competition, as English hematite is coming in via Antwerp and can be had for 320 francs ($27.52) f.o.b. frontier.

Prices of semifinished products remain firm, although there is a lack of demand. The Comptoir Siderurgique booked orders for approximately 55,000 tons of rails and beams during January. A mill in the eastern district has sold soft steel flats measuring 9 x 85 millimeters and 9 x 100 millimeters at 530 francs ($45.58) per metric ton, f.o.b. mill. A Lorraine mill quoted 515 francs ($44.29) for flats, and 450 francs ($38.70) for open-hearth billets. The Schneider company has quoted 12 millimeter angles and flats measuring 18, 20 and 22 millimeters at 500 francs ($43).

In the plate and sheet department the demand continues active and prices are firm although British competition in sheets is felt keenly. One firm in the central district booked an order for 3 millimeter open-hearth sheets at 830 francs ($71.38).

Proposed Trade Pacts Affect Belgium

European Staff Correspondence

BRUSSELS, Feb. 16.—The proposed selling agreement between allied steel producers is still the subject of much discussion. The reconstruction of the Comptoir des Acieries is being delayed owing to the conflicting interests of the several participants.

It appears certain that the Belgian-Luxemburg economic agreement will be ratified notwithstanding the fact that Luxemburg seems to have by far the most to gain thereby. Opportunities for Belgian trade in the grand duchy are comparatively limited whereas Luxemburg products will find a ready market in Belgium. It is also feared that Germany will take advantage of the situation to dump her products onto the Belgium market through Luxemburg. This is keenly resented by domestic producers as competition from Germany has already become a serious problem. This state of affairs has not facilitated negotiations which have recently taken place in Paris looking toward the re-

Franc—$0.082

organization of the international rail syndicate. However, optimism prevails in certain quarters as to the final results of these overtures in view of the fact that conferences are taking place frequently and strenuous efforts are being made to solve the problems confronting industry.

The general aspect of the iron and steel market is undecided. Economic and political conditions are causing much unrest and the wage question is also coming to the front.

The brightest spot in the market is in the semifinished department. The absence of French competition probably accounts for this condition. Prices remain firm.

The large plant of the Forges de la Providence at Marchienne au Pont has booked orders for 8000 tons of rails for Bulgaria; 5000 tons for Japan and 5000 tons for the Irish railways. Competition for the Irish order was very keen, as not only did other home industries bid for the contract, but also French, British, Luxemburg and German makers.

Merchant bars, beams and angles are in small demand but plates and sheets are still holding up well. L'Esporance Longdoz have their order books well filled and are quoting 900 francs ($73.80) per metric ton for 1-millimeter basic-bessemer sheets, whereas another maker quotes 850 francs ($69.70). Ougrée-Marihaye has resume the manufacture of electrical sheets but deliveries are extended. Wire nail exports have decreased on account of the drop in sterling exchange.

Belgian production of pig iron during 1921 amounted to 867,390 tons. The production of semifinished steel was 767,400 metric tons, of finished steel products 832,110 tons, and of steel castings, 64,210 tons.

German Output Low; Pig Iron Imported

European Special Correspondence

DUSSEIDORF, Germany, Feb. 15.—Production has been considerably restricted in the past few days owing to coke shortage and traffic disorganization resulting from the rail-

Mark—$0.005

way strike. From one standpoint the steelmakers view this situation with equanimity because the volume of new business is exceedingly light, and if it were not for the reduced production unfilled orders would shrink much more

rapidly. These backlogs are being worn thin in various directions and the producers for the first time in many months are becoming anxious regarding their rolling schedules.

Prices in some directions show fractional advances but this is due mainly to the temporary stringency resulting from the railway strike. The tone of the market is weak. Pig iron output is more unsatisfactory than steel production and as a result heavy orders for pig have been placed in England and Lorraine recently.

Semifinished steel is scarce also owing to reduced production and exports of this commodity have practically ceased. A fair amount of pipe and tube business is passing. Wire is weak and dull as are bars, plates, shapes and rolled steel generally. Thin sheets, however, are in active demand.

Owing to the coke shortage at the furnaces, offerings of both inland and foreign ores far exceed the demand and prices are exceedingly uncertain. A sale of phosphoric Wabana, Newfoundland ore, aggregating about 300,000 tons has been reported at 11 shillings ($2.35) per ton, f.o.b. Newfoundland port.

On account of recent advances in the price of coke due to increased coal tax and higher wages, together with advanced railway freight rates, pig iron prices have again been advanced making No. 3 foundry 3371 marks ($16.85) as compared with recent quotations of 3250 marks. German foundry iron is now higher than American foundry iron at Birmingham, Ala., and just about the same as British iron. German hematite which is now 3979 marks ($19.89) is slightly higher than British hematite and higher than bessemer, valley, which is the American iron most closely approaching hematite in composition. German ferromanganese 76 to 80 per cent, is now quoted 12,300 marks ($60.15) with 50 per cent ferromanganese at 9580 marks ($47.90) and standard ferrosilicon at 4750 marks ($23.75) a ton.

As far as pig iron is concerned, the German price position in relation to that of other European producers has been almost completely reversed in the past three or four months. This alone accounts for the increased exports of pig iron from France and Great Britain to Germany.

Czechs Face Keen German Competition

European Special Correspondence

Austrian Crown—$0.00014

VIENNA, Feb. 15.—The recent strike of coal miners in Czecho-Slovakia, which has been settled, had a disturbing effect on business confidence. Otherwise it was not especially serious in view of the fairly large accumulations of coke and other fuel at iron and steel works. These supplies were sufficient in view of the low rate at which plants were working, but the aftermath undoubtedly will have an unfavorable effect, even though the strike was not successful. Czecho-Slovakian works are again feeling German competition rather severely. Last fall, when mills were more fully engaged, a considerable overflow of tonnage was diverted to Czech producers. German mills are now beginning to seek business again.

In Austria, where the iron and steel works still have plenty of orders, operating difficulties are looming up. The German railway strike interfered with the coke traffic so seriously that the Alpine-Montan-Gesellschaft was required to bank all but one blast furnace. Now that the railway strike is ended it is hoped that a second furnace may be restarted shortly. The company, however, has abandoned its plans to blow in a third furnace.

Iron and steel prices have again been advanced, bars now being quoted 320,000 crowns per metric ton. At current exchange this is equivalent to $45.76

Czech Crown—$0.019

per ton, or 2.08c per pound. Austrian prices have quadrupled since the early part of December, expressed either in terms of crowns or foreign currency. The latest quotations are above world parity indicating that it is going to become difficult to maintain Austrian export trade on the scale it recently attained. The increases

In Hungary the iron and steel works are fairly well engaged. A protective tariff almost prohibits the importation of German and Austrian iron and steel and since Hungarian production is in excess of the domestic demand, considerable quantities are being exported to Jugoslavia and Roumania.

Birdge Building Contemplated in Canada

Special Correspondence

TORONTO, Ont., Feb. 27.—Those interested in the pig iron market continue to look forward to better times making their appearance during the month of March or April. Melters are confining their buying to immediate requirements with only an occasional consumer buying for future delivery. No. 1 foundry, 2.25 to 2.75 silicon and malleable is quoted at $27.15 and No. 2, foundry, 1.75 to 2.25 silicon at $26.15 Toronto. Montreal prices are No. 1 foundry and malleable, $29.80; No. 2 foundry, $28.80.

The highway department plans to proceed with bridge construction on a fairly large scale this year. Shapes and beams are quoted at 2.35c, Toronto. Mill representatives say that while orders for bars for small tonnages in most cases individual buyers are becoming more numerous. Bars are quoted at 2.35c, Toronto. Plates are quoted at 2.20c, Toronto and the demand is increasing.

A fair tonnage of sheets was booked during the week, but in most cases mills are able to take care of consumers from stock. Sheet prices continue unchanged; No. 28 gage black are quoted at 4.00c, and No. 28 gage, galvanized at 5.10c, Toronto. While rail mills have been the most active for the past three or four months, it is now stated that the mills will shortly have to close down. The suggestion has been made to the Canadian National railways that additional orders be placed to the extent of 24,000 tons or more for the Sydney mills. This may get consideration from the standpoint of furnishing employment, although liberal allowance has been made for the 1922 rail supply.

The demand for heavy melting steel and turnings has again taken a slump but despite this fact they continue to offer $8 per gross ton for heavy melting steel, Hamilton, and $3 for turnings. The demand for machinery cast is making progress. Dealers continue to find some difficulty in picking up machinery cast and are still offering $15 per net ton Toronto.

Blames Roof Design in Theater Disaster

Washington, Feb. 28.—In a detailed report on the Knickerbocker theater disaster, to be laid before the District of Columbia grand jury shortly, the Washington chapter of the American Institute of Architects states:

"The committee finds that the roof construction was poorly designed, that it was so faulty in its entirety that the partial collapse of any part of the structure would in turn produce conditions which would bring about the collapse of the entire roof. This feature of the design is, in our opinion, fundamentally wrong, as no structure should be so interdependent that the breaking of one portion produces the collapse of the whole. To make matters worse a great many members of the roof framing were greatly overstressed, producing conditions which made the total collapse inevitable, it being only necessary for a slight overloading, due to snow or some severe shock, to precipitate the entire structure into the auditorium.

"As to the immediate case of the failure, there are so many evidences of weakness, so many faulty details of design, such as over-stressed members of trusses, beams, columns, etc., so many poor connections that, in our opinion, they all contributed their share in the final collapse."

The practice of permitting the steel contracor, who "has a financial interest in all that is done", to change the design is severely condemned by the architects, who assert that at best a painstaking checking should follow. Lack of proper inspection also is apparent, the committee found. Concluding, the committee recommended that architects and engineers be registered. The committee's report will be considered by the District grand jury, which is examining the case to see if the nine men bound over from the coroner's jury can be held for involuntary manslaughter. The cave-in of the Knickerbocker roof occurred on Jan. 28, killing 98.

Overrules Corporation in Base Pleas

WASHINGTON, Feb. 28.—Hearing of the federal trade commission's complaint in the Pittsburgh basing point case will be resumed tomorrow at Minneapolis with attorneys for the commission more firmly entrenched than ever as the result of the commission's decision on the moot points brought up for argument before the full body last Friday. Every motion made by counsel for the United States Steel Corp. has been denied; substantially all of the requests made by counsel for the commission have been granted. The ruling of the commission will have a most important bearing on the testimony yet to be taken in the case.

Counsel for the Steel corporation asked the commission to bar the introduction of invoices of steel sales by producers other than corporation subsidiaries, to rule out resolutions by state legislatures and other bodies, to restrict so-called expert testimony and to permit exhaustive examination of the finances, profits and margins of those steel consumers claiming Pittsburgh base prices have injured them financially. These motions all have been refused. The motion of counsel for the commission to further amend the amended complaint in several instances, all of them technical, has been granted. The motion of counsel for the commission to strike out portions of the corporation's amended answer has been denied, except where corporation counsel has acquiesced.

W. W. Corlett, counsel for the Steel corporation, contended that many of the so-called experts who alleged they could not compete to the East because of the basing point practice while their competitors in the East could reach into the West, were expert only so far as their own business was concerned. Only by thorough examination of a witness' business, he argued, could it be determined if he were being harmed by the basing point practice, as an alleged loss might be charged to an arm of his business in no way affected by Pittsburgh plus. Resolutions by state legislatures, those of Minnesota, Illinois and Iowa having been introduced, prove public interest to a limited extent but could not be considered as evidence, Mr. Corlett declared. As only the corporation was on trial, invoices of other producers could have no bearing on the case, he affirmed.

H. E. Steinhauer, counsel for the commission, held that the introduction of invoices was necessary to show the dominance of the corporation and to uphold the contention that if the corporation abandoned the practice the independent producers would be compelled to do likewise. The invoices would show that the practice tended toward uniform prices and thereby lessened competition, he said. Many of the corporation's objections were for psychological purposes, to becloud the real issues and to put the minds of witnesses asleep to the law. Mr. Steinhauer charged. A discourse by W. H. Fuller, chief counsel for the commission, that the commission was not a judicial body and therefore could not pass upon the motions, was charged by C. A. Severance, attorney for the corporation, as "bureau form of government gone amuck." Mr. Fuller's arguments were rejected by the commission.

The Gardner Brass Works, Gardner, Mass., of which Edmund F. Preece and Benjamin W. Preece are the proprietors, have filed a voluntary petition in bankruptcy disclosing liabilities of $13,703 and assets of $624. They also filed individual petitions in bankruptcy.

Steel Wage Average Less

Washington, Feb. 28.—Wages of employes of iron and steel works in January decreased about 13 per cent from January, the average for January being $78.74 per month contrasted with an average of $89.28 in December. In January, 1921, the average was $138.04. These averages are from the bureau of labor statistics' reports, showing 103,056 men employed in January, 1922, and 131,358 in January, 1921, in the identical 103 works.

Abandon Sales Tax Plan

Washington, Feb. 28.—With the soldiers' bonus bill still in abeyance because of the difficulty in finding the means for raising the necessary billions, the proposed sales tax seems discarded without possibility of revival and the treasury's proposal for increased tax levies is no longer considered. Today the most likely procedure is that the bonus bill will not carry with it any specific suggestion for the raising of funds, in the hope interest on the foreign loans will suffice when the first payment, scheduled for Oct. 1, are made.

Although the ten molders' unions in Boston and vicinity have rejected the wage cut of 5 cents an hour proposed by the Foundrymen's Association of Boston, they have agreed to continue the present scale of 75 cents an hour, or $6 a day, for another month, pending further conferences. Up to nine months ago the molders were paid 90 cents an hour for a day of eight hours.

Deficits No Forecast for 1922

Losses Reported by Leading Independent Steel Companies Reflect Conditions in a Year of Unparalleled Depression—Present Signs Point to Improvement—Farm Trade Better—Europe Situation Encouraging

BY JOHN W. HILL, FINANCIAL EDITOR

THE appearance last week of a number of unfavorable earnings reports covering steel company earnings in 1921 attracted unusual interest in the financial markets. The passing of the dividend on preferred stock by the directors of the Republic Iron & Steel Co., accompanied by a statement regarding "the uncertainty of the outlook" was an even more impressive event than the exhibits of deficits. These latter were to be expected. They reflect conditions in the unprecedentedly depressed year of 1921 and in nowise have they any bearing upon what is in store. Neither is the passing of the Republic cumulative preferred dividend to be regarded as a serious foreshadowing of future developments. This dividend has been passed before, but always made up and the same undoubtedly will be true in this instance. Manifestly many steel mills are making no profits now due to the restricted operations, low prices and high freight charges. But should the present improving tendencies continue and expand, as many signs indicate, a different story will be told before many months have passed.

Furthermore, as operations increase prices are bound to stiffen. Already a few instances of this have occurred and from one or two points come reports of orders that are getting ahead of output. The interstate commerce commission is yet to be heard from on freight rates. While horizontal reductions are no longer expected, cuts on certain basic products like iron and steel, coal and building materials are probable.

Events of the past few days have left little room for doubt that a genuine upturn in trade is developing. Sharp, robust advances continue in many financial and commodity markets. Corn and wheat have sought new high levels for the present crop and this week's prices represent advances of about 40 per cent from the 1921 low points. Wool is up from 40 to 70 per cent, cotton is holding well at 80 per cent higher than the 1921 bottom, and advancing tendencies continue in many other farm products.

As a result, the desperate gloom which pervaded the agricultural sections at the first of the year is fading away. Trade reports from farm districts already are reflecting greater cheer. Bank loans are being paid and implement makers are beginning to fell some stimulus of better demand. With their purchasing power enhanced some hundreds of millions of dollars, the farmers will contribute substantially to the recovery of business.

Growing car loadings at a time usually marked by a slump, continues an outstanding business development. The total is 182,000 cars greater than at the beginning of January. With business expanding and a coal strike looming, one of the possible developments of the year is a car shortage. Students of the situation emphasize the subnormal condition of facilities. It is estimated that to keep even with normal needs of the country the roads for a period of years must lay 6000 miles of track and buy 210,000 freight cars annually. It is an interesting and significant fact, especially for the steel industry, that since the beginning of the year fully 25,000 cars have been ordered, a sum equal to the total orders for all of 1921. The strong emphatic response of the foreign exchanges and of the foreign investment bonds to the news of the 20-year alliance between Great Britain and France was in keeping with the overshadowing significance of this event.

Curtailment of land armaments and co-operation of the leading allies in the great task of rearing a solid economic structure in war wrecked Europe are the outstanding results promised by the alliance. The most pressing need of France was assurance of her security. She has won this. Now she cannot well refuse to join Great Britain in bringing about the economic and industrial restoration of Europe.

The great task will be definitely grappled at the Genoa conference now called for April 10. Serious headway by Europe in setting its own house in order, creating economic stability, and banishing war for a period, will enable this country to aid her with the vast accumulation of investment funds here. The promise of European recovery is proof of the most cheering developments.

The Barometer of Business

WEEKLY COMPARISON

	Last Week	Week Before	One Month Ago	One year Ago	1913
Business failures	478	610	605	470	444
Cash ratio Federal Reserve system, per cent.	78.1	76.4	77.2	50.3	....
Loan rate 4 to 6 months, New York, per cent..	4¼-5	4¼-5	4¼-5	7½-7¾	5-5¼
Bank clearings (000 omitted)	$6,051,359	$6,307,124	$5,848,486	$5,743,793	$3,400,000
Average 20 industrial stocks	$81.72	$80.33	$77.79	$73.94	$80.50
Average 40 bonds	$77.02	$76.78	$76.37	$70.20	$93.00
Car loadings (week ended Feb. 11)	788,412	750,997	720,877	681,627	*686,620

MONTHLY COMPARISON

	January	One month Before	One Year Ago	1913
Building awards 27 states.	$166,320,000	$198,518,000	$111,607,000	*$71,450,000
Business failures:				
Number	2723	2444	1895	*1336
Liabilities	$73,795,790	$87,502,382	$58,871,539	*$22,723,000
Excess of exports	$63,000,000	$59,100,000	$445,925,776	*$54,406,000
Excess of gold imports..	$25,737,000	$28,734,730	$30,908,987	†$630,716
Bureau of Labor Wholesale Price Index	148	149	177	100
Bradstreet's Index of Wholesale Prices	123.2	122.8	137.5	100
Economist's Index of British Prices	4284	4357	5617	2732
National Industrial Conference board's Cost of Living Index	157.7	161.4	176.3	100
New incorporations	$843,652,900	$618,592,300	$1,243,640,000	$172,301,000
Railroad net earnings	x$50,000,000	$67,000,000	$10,226,000	*$59,900,000

*Monthly average. †Monthly average export excess. ‡1918. x December.

FOREIGN EXCHANGE (Demand)

	Normal	Last Week (closed)	Week Before	One Month Ago	One Year Ago
Sterling	$4.86	$4.41	$4.37	$4.24	$3.86
Francs	19.3c	9.08c	8.97c	8.19c	7.13c
Lira	19.3c	5.15c	4.96c	4.46c	3.64c
Marks	23.8c	0.45c	0.48c	0.50c	1.48c

The Trend of Business

March 2, 1922

TRADE TODAY, TOLD BY IRON TRADE REVIEW CHARTS

GENERAL SITUATION: Betterment in trade and in business sentiment grows more positive week by week. Adverse features dwindling and underlying factors distinctly encouraging. Darkest clouds are impending wage struggles which promise to mark one of the final phases in process of readjustment to workable peacetime cost levels.

INDUSTRIAL PRODUCTION: Output of goods in many lines greater than one month or one year ago. Automobile production responding to spring demand and some plants are at capacity. Tire output double one year ago.

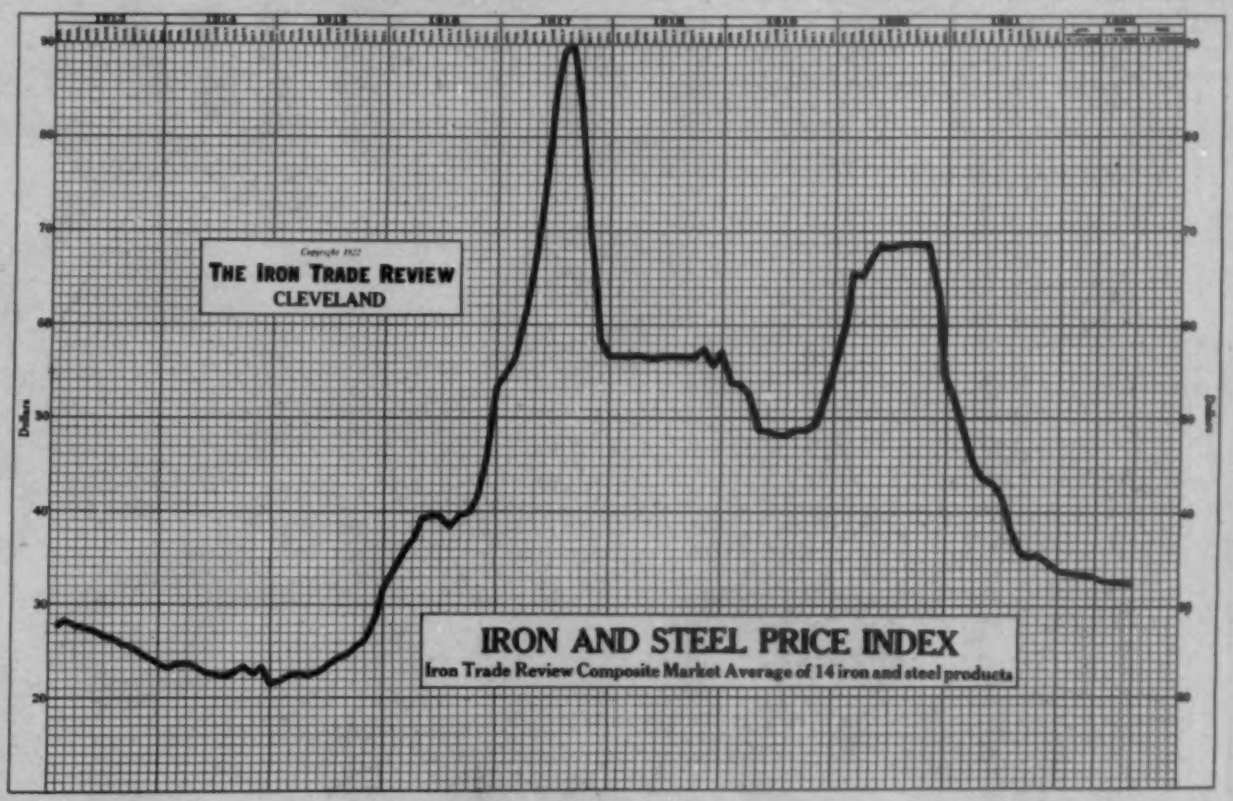
TRAFFIC: Movement of freight for week of Feb. 11 greatest on record for the period. Car loadings which ordinarily drop in February are rising rapidly. Shipments of merchandise increasing with that of coal.

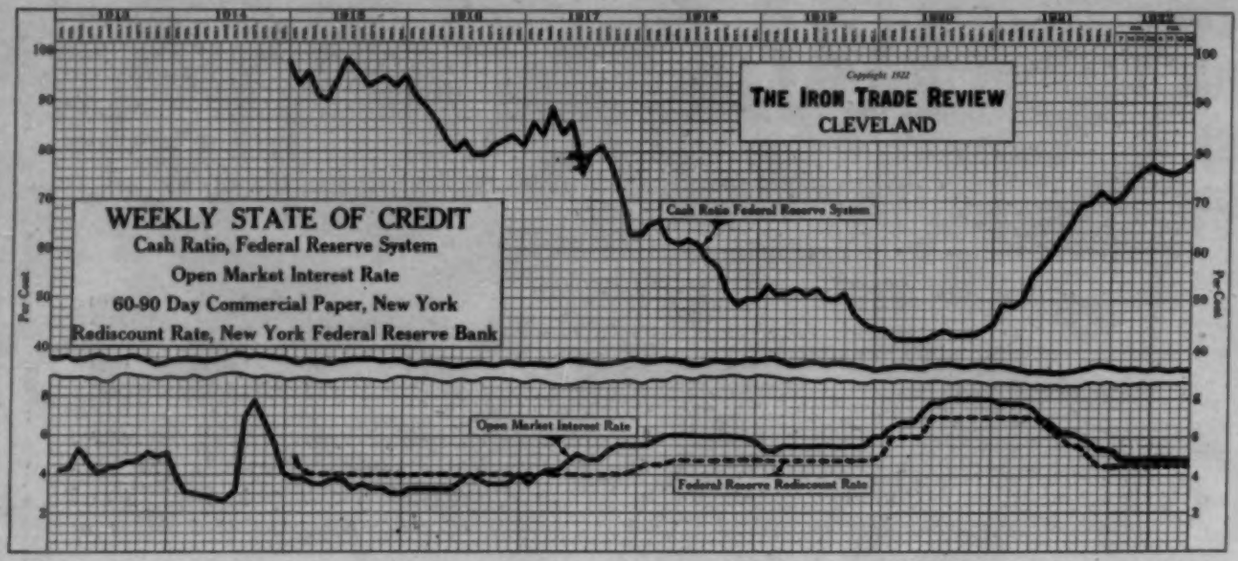
CREDIT SITUATION: Federal Reserve ratio makes another sharp gain and is back to pre-Liberty loan levels. Money continues in ample supply.

FOREIGN EXCHANGE: Striking advance of exchange rates as shown in chart reflects economic recovery in Europe and is one of most constructive features of economic situation.

SECURITY MARKETS: Upward advance of 50 representative stocks continues as a forecast of trade improvement. Rise of 40 bonds indicates easy money and enormous investment demand.

COMMODITY PRICES: The Iron Trade Review index still pointed downward. Is now back to early 1916 levels. Farm prices increase as other prices fall. Copper price curve declines under influence of lack of demand.

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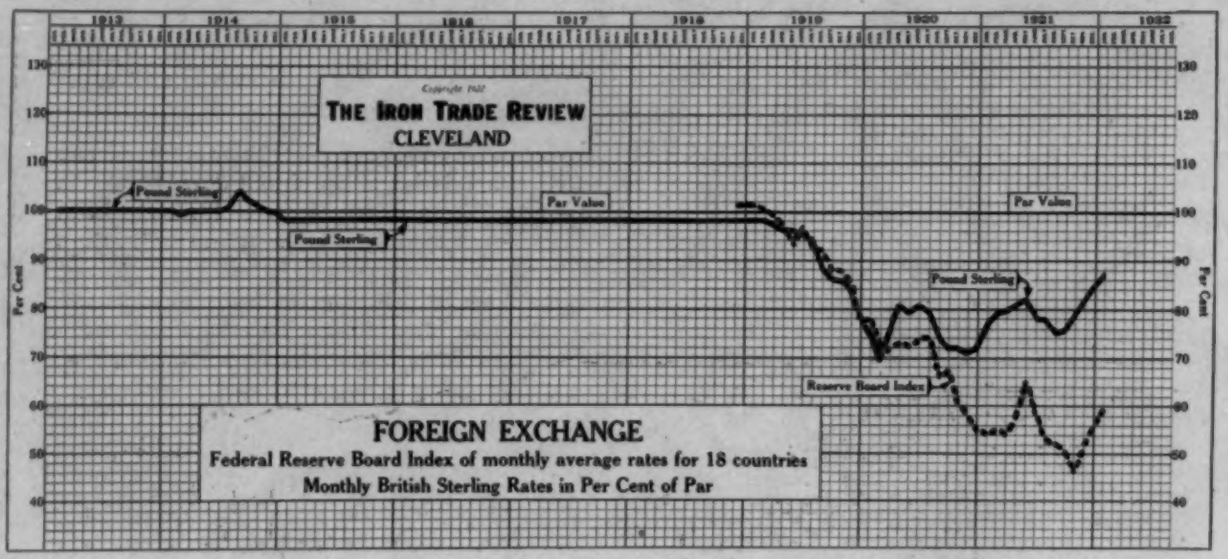
CLEVELAND
WEEKLY STATE OF CREDIT
Cash Ratio, Federal Reserve System
Open Market Interest Rate
60-90 Day Commercial Paper, New York
Rediscount Rate, New York Federal Reserve Bank
Cash Ratio Federal Reserve System
Open Market Interest Rate
Federal Reserve Rediscount Rate
Per Cent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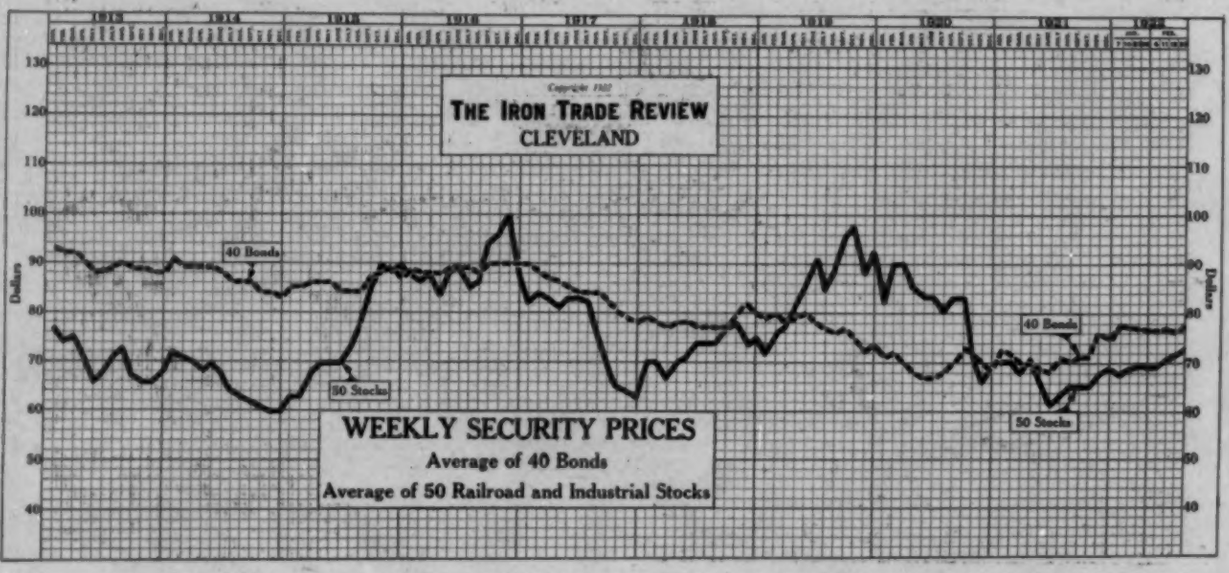
Pound Sterling
Par Value
Reserve Board Index
FOREIGN EXCHANGE
Federal Reserve Board Index of monthly average rates for 18 countries
Monthly British Sterling Rates in Per Cent of Par
Per Cent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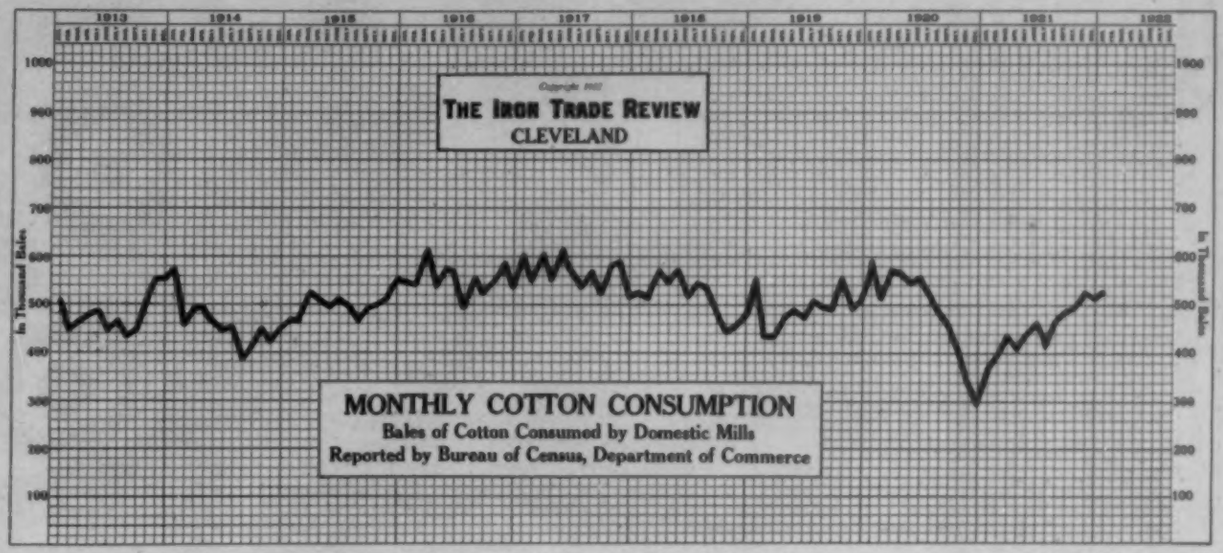
40 Bonds
50 Stocks
WEEKLY SECURITY PRICES
Average of 40 Bonds
Average of 50 Railroad and Industrial Stocks
Dollars


1913
1914
1915
1916
1917
1918
1919
1920
1921
1922
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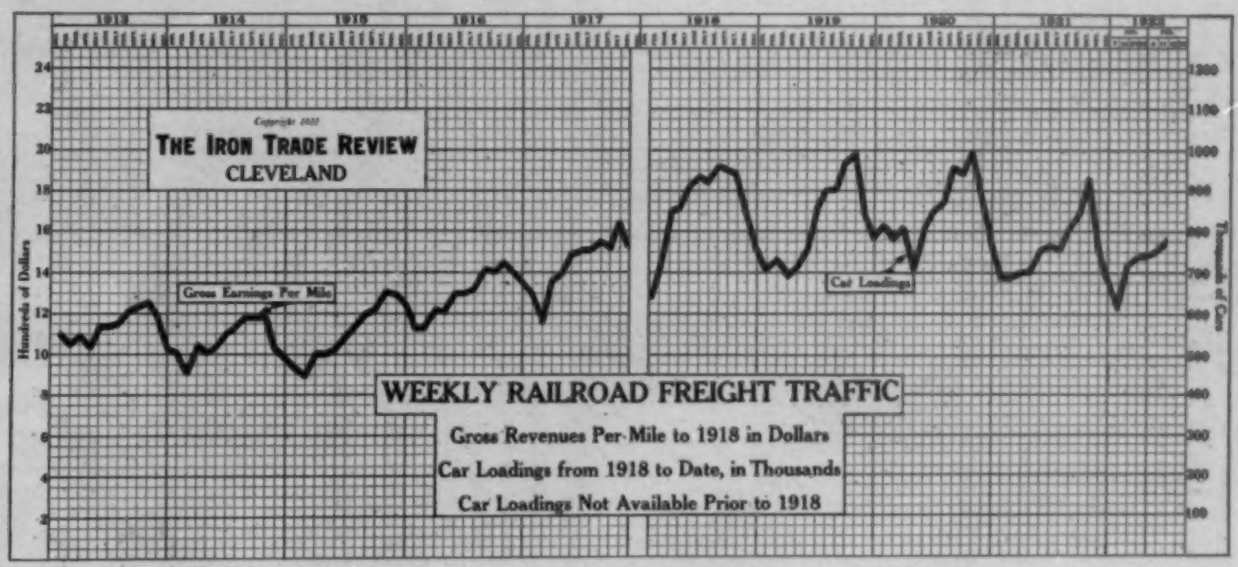
CLEVELAND
In Thousand Bales
MONTHLY COTTON CONSUMPTION
Bales of Cotton Consumed by Domestic Mills
Reported by Bureau of Census, Department of Commerce


1913
1914
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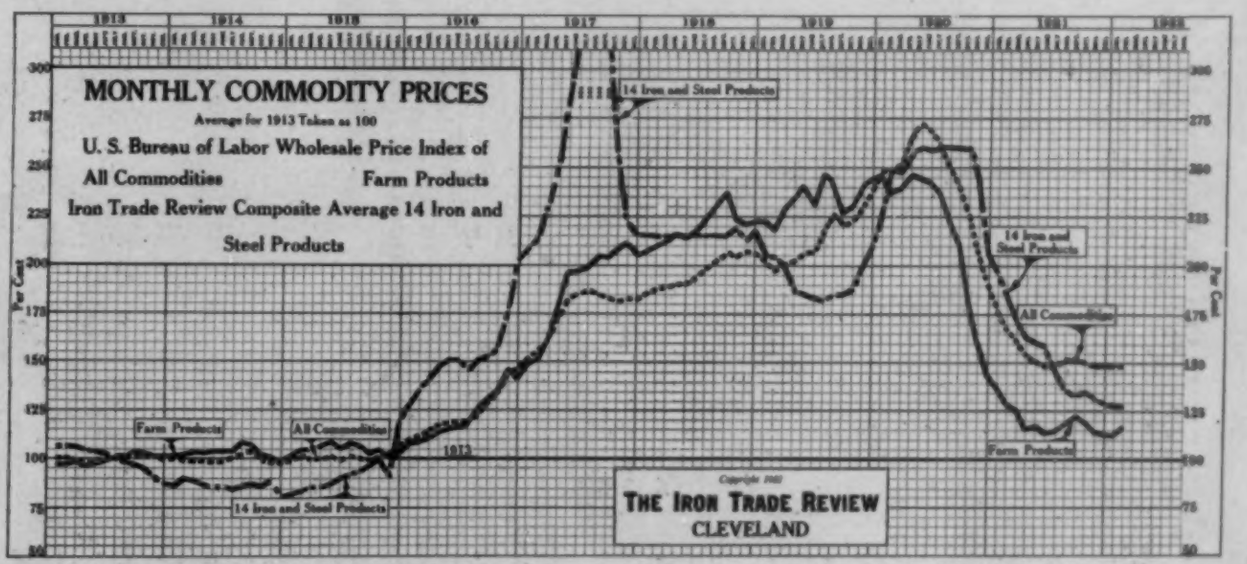
Hundreds of Dollars
Thousands of Cars
Gross Earnings Per Mile
Car Loadings
WEEKLY RAILROAD FREIGHT TRAFFIC
Gross Revenues Per Mile to 1918 in Dollars
Car Loadings from 1918 to Date, in Thousands
Car Loadings Not Available Prior to 1918


1913
1914
1915
1916
1917
1918
1919
1920
1921
1922
MONTHLY COMMODITY PRICES
Average for 1913 Taken as 100
U. S. Bureau of Labor Wholesale Price Index of
All Commodities
Farm Products
Iron Trade Review Composite Average 14 Iron and
Steel Products
Per Cent
14 Iron and Steel Products
All Commodities
Farm Products
1913
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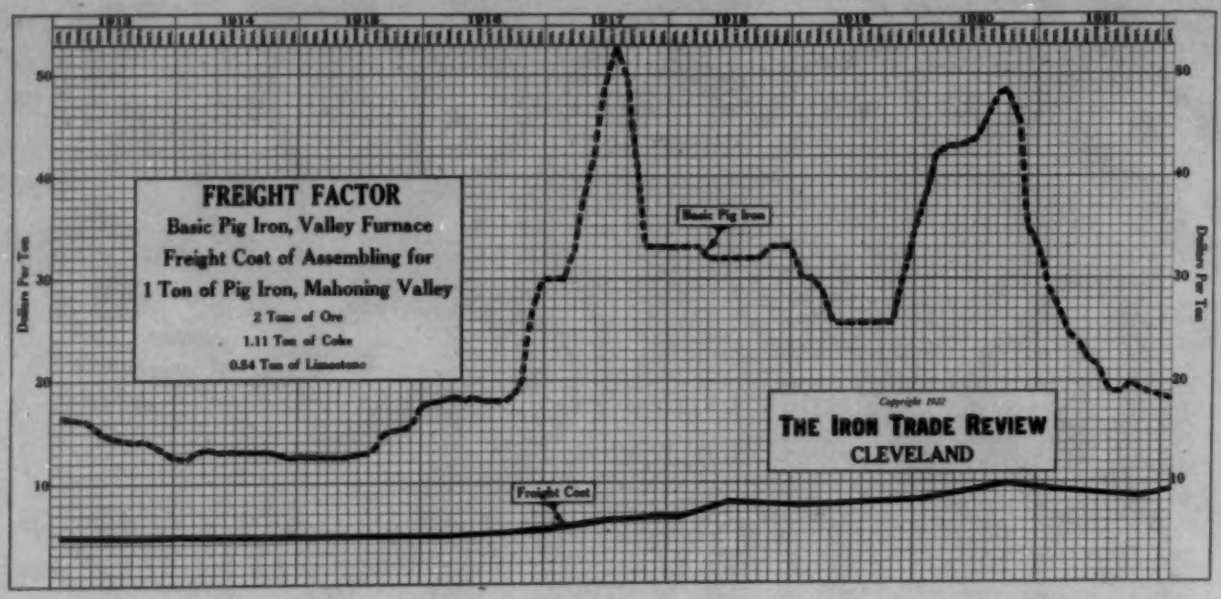
FREIGHT FACTOR
Basic Pig Iron, Valley Furnace
Freight Cost of Assembling for
1 Ton of Pig Iron, Mahoning Valley
2 Tons of Ore
1.11 Tons of Coke
0.54 Ton of Limestone
Basic Pig Iron
Freight Cost
Dollars Per Ton
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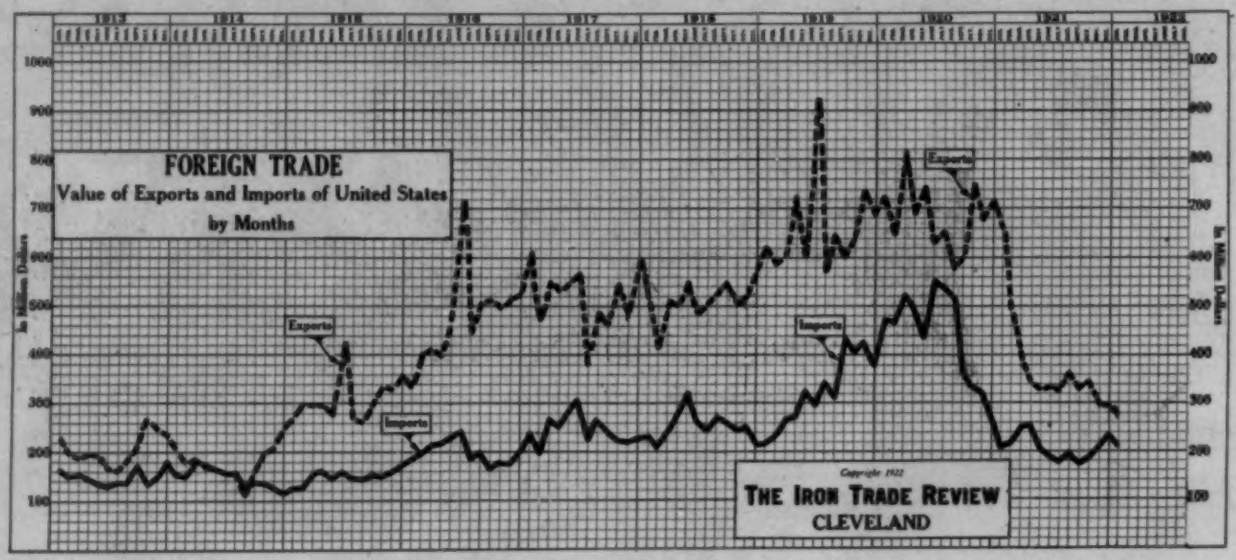
FOREIGN TRADE
Value of Exports and Imports of United States
by Months
Exports
Imports
In Million Dollars
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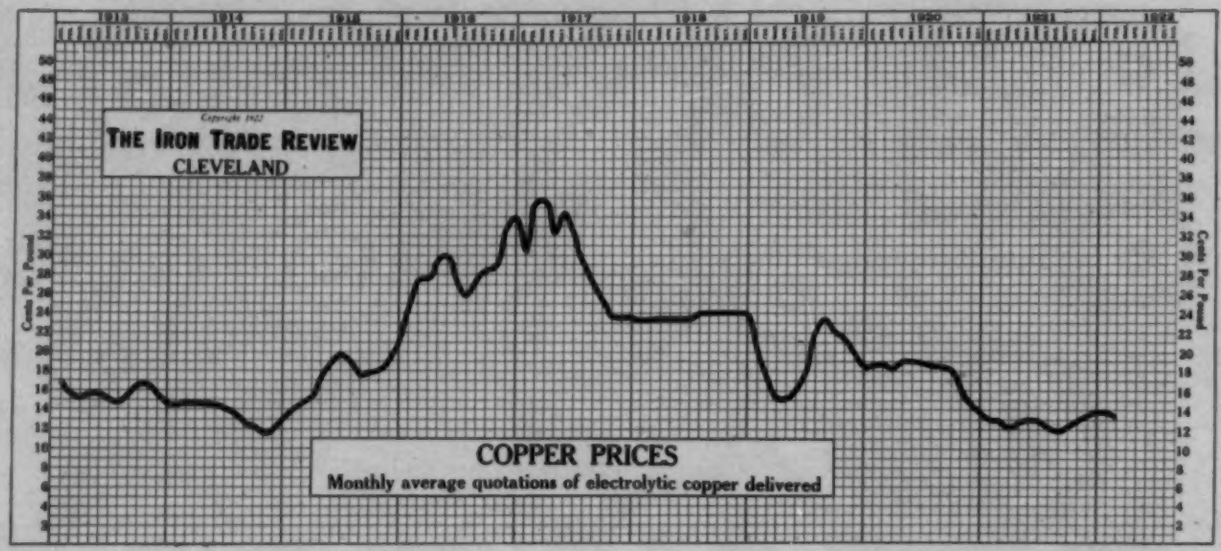
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CLEVELAND
COPPER PRICES
Monthly average quotations of electrolytic copper delivered
Cents Per Pound

Poles Get Upper Silesian Mills

Decision of League of Nations, Since Ratified by Powers, Gives Five of Eight Blast Furnaces and Nine of 14 Steel Plants and Rolling Mills to Poland—Affects Fuel Supply

BY BRUNO SCHAPIRA
Central European Correspondent of The Iron Trade Review

ALL the iron ore in Upper Silesia and a heavy proportion of the blast furnaces and steel plants go to Poland under the recent decision of the league of nations, since ratified by the allied powers and accepted by Germany and Poland, establishing a new frontier which bisects the so-called industrial triangle in this region. Out of eight blast furnace plants, comprising 37 stacks, five become Polish and three remain German. Of the 14 steel plants and rolling mills in this region, nine go to Poland and five remain German. While it is hoped the economic restrictions laid down to safeguard the new frontier will obviate a serious dislocation of the Upper Silesian iron and steel industry considerable difficulty is to be apprehended owing to the fierce national animosities involved.

Depend on Imported Ore

The iron and steel industries of Upper Silesia are chiefly dependent on the importation of Swedish and Russian ores. The output of the iron ore mines in Upper Silesia itself which in 1889 still amounted to 800,000 metric tons has decreased since that time to 138,000 tons in 1913 and 62,644 tons in 1920. All the deposits are located on Polish territory according to the new boundary line recently established. There were 10 mines in service in 1913 and seven in 1920. The output consists exclusively of brown iron ore. The production in recent years, in metric tons has been as follows:

Year	Tons
1913	138,204
1914	117,081
1915	128,609
1916	117,671
1917	81,710
1918	62,194
1919	61,469
1920	62,644

The blast furnaces remaining German property are dependent on the coking coal supplies from the parts which are going to Poland, since only the coal found in the districts of Rybnik and Pless can be coked. The supply of coking coal from the Ruhr in Westphalia is out of question on account of the high freight rates. For this reason, the special economic convention to be contracted between Germany and Poland according to the decision ordained by the league of nations guarantees to both parties free import and export of the mining products and coal for a period of 15 years. To cover the demand of the blast furnaces considerable quantities of iron ore have always had to be imported in this region. The figures of ore and pig iron production are as follows, in metric tons:

Year	Total iron ore consumption Tons	Pig iron production Tons
1913	1,432,800	994,601
1914	1,285,588	848,577
1915	1,195,406	777,452
1916	1,175,200	748,047
1917	1,078,218	752,395
1918	1,033,698	696,146
1919	707,559	459,954
1920	916,278	575,802

The fuel situation of the steel plants is the same as that of the blast furnaces. Moreover, the situation is getting more complicated through the fact that some of the companies have their coal mines, blast furnaces and rolling mills in different districts so that their establishments will be partly on Polish and partly on German territory. A characteristic example of this state of things is found in the Oberschlesische Eisen-Industrie Aktfengesellschaft. Its iron ore mines are situated on Polish territory, while its coke ovens are in Germany, along with the blast furnace, but the steel works are partly on German and partly on Polish territory, the wire and tin plate mills also being partly on German and partly on Polish territory.

The production of the steelworks and rolling mills of Upper Silesia have, since 1913, developed in the following manner, in metric tons:

	Steel ingot production Tons	Rolling mill output Tons
1913	1,463,601	957,146
1914	1,220,343	798,371
1915	1,219,801	716,735
1916	1,432,432	745,968
1917	1,486,533	631,247
1918	1,312,494	673,655
1919	859,182	529,035
1920	1,224,799	705,357

Of the 25 iron and steel foundries in Upper Silesia 12 remain German property and 13 are going to Poland. As another striking example of the effects of the political division the Oberschlesische Eisenbahn-Bedarfs Aktfengesellschaft may be mentioned. Its blast furnaces and coal mines are situated in Poland, while its steel foundries are located in Germany and its steelmaking establishments are partly in Germany, partly in Poland. The production of the foundries of Upper Silesia, covering both iron and steel castings has been as follows in recent years:

Year	Tons
1913	83,846
1914	65,222
1915	59,685
1916	67,845
1917	75,119
1918	68,577
1919	48,043
1920	55,219

The finishing mills in Upper Silesia include the following: Eleven forging establishments, seven of which have been assigned to Germany and four to Poland; seven pipe mills, one of which is assigned to Germany and the rest to Poland; 13 engineering works of which six go to Germany and seven to Poland; nine machine shops of which five go to Germany and four to Poland; and finally 14 miscellaneous establishments of various kinds such as wire mills, tin plate mills, etc., seven of which are to be German property and seven Polish. What has been said regarding the effect of the political division makes itself felt in these latter plants in a specially striking way, a great many of them belonging to districts which differ politically from those from which they get their supplies of raw materials.

Coal Mines to Poland

The greatest loss, however, sustained by Germany is caused by the severance of the richest parts of the Upper Silesian coal deposits. Germany loses 42 per cent of the total reserves of coal extending downward to a depth of 4500 feet, and Poland should eventually become one of the first coal producers of Europe. The abundance of coal existing in Upper Silesia is not fully indicated by the output figures which amounted, in 1913, to 43,800,000 metric tons, and in 1920, to 31,700,000 tons. Since the most important coal deposits, located in the districts of Pless and Rybnik, have not been developed until recently, while the coal layers remaining in German possession are already exploited to a certain extent. Of the 67 coal mines in service in 1920, 14 re-

main on German territory, and 53 go to Poland.

The Upper Silesian coal output is as follows:

Year	Metric tons
1913	43,800,000
1914	37,400,000
1915	38,400,000
1916	42,000,000
1917	43,000,000
1918	40,000,000
1919	26,000,000
1920	31,700,000

Summing up the effect of the partition of the Upper Silesian iron and steel plants and coal mines we see the following result:

Kind of plant	Plants remaining German	Plants going to Poland
Iron ore mines	..	7
Blast furnace plants	3	5
Steelworks and rolling mills	5	9
Iron and steel foundries	12	13
Forging plants	7	4
Pipe mills	1	6
Engineering works	6	7
Machine shops	5	4
Wire and tin plate mills	7	7
Coal mines	14	23

Some remarks regarding the iron industry of Poland apart from that of Upper Silesia may be added. In Poland, four iron ore districts can be distinguished, namely those of Crakow, Radom, Kielce and Bendzin, containing altogether 300,000,000 tons of iron ore reserves, partly ascertained and partly presumed. The percentage of iron contained in this ore amounts to from 30 to 40 per cent and the costs of production are rather high, so that iron ores were imported from Russia and Sweden before the war. In 1913, there existed in Poland 13 blast furnaces and 92 open-hearth furnaces, which together made 420,000 tons of pig iron and 1,000,000 tons steel. The total Polish iron ore output then amounted to 300,000 tons.

Poland Gets Bulk of Coal

The Polish blast furnace works are in Sosnowice, Milowice, Ostrowice, Huta Bankova, Puschkin, Poreba, Konskie, Zawiercie and Czenstochow. The coal produced in the Polish coal district cannot be coked, so that Poland was compelled in prewar times to import 1,500,000 tons of coal per year from Upper Silesia. The coal reserves of the Dombrowa basin are estimated at 2,000,000,000 tons and of all Upper Silesia 166,000,000,000 tons, the greatest part going to Poland. The coal mines of this district are now owned mainly by French companies. The annual coal output of Dombrowa amounted to 7,000,000 tons and that of Western Galicia to 2,000,000 tons before the war.

In prewar times, Russia was almost exclusively the outlet for the industrial products of Poland, which in turn imported 60 per cent of its raw materials from abroad, mainly from Germany. The result is that the assignment of the industrial districts of Upper Silesia to Poland should result in a considerable increase in the industrial power of the new state.

Equalizing Power Demand in Sheet Mills

AN INTERESTING example of the possibilities of reducing manufacturing costs by way of the power bill is given by R. S. Lowry, formerly electrical engineer, Newton Steel Co., Newton Falls, O., in the Aug. 6, 1921, issue of the *Electrical World*. A study was made of the power demands of a sheet mill equipped with modern electrically driven rolls. After the works had been in operation to its capacity for one month an examination of the demand chart of the total mill load disclosed the following condition: The highest peaks usually came at about 2 a. m. each Monday, the curve dropping off slightly toward 7 a. m., and then suddenly rising at that hour to about where it had been at 2 a. m. A slight sloping off in the curve after 7 a. m. then began and continued the rest of the day, when the curve with the exception of a few occasional peaks became fairly straight the rest of the week. It was apparent that four or five days in the month, or, worse yet, about 15 minutes out of each of these days, were regularly determining the month's demand bill.

The hot mills in a sheet plant are shut down for changing rolls and repairs on Saturday morning and operations are again resumed at midnight Sunday. Of course the roll train and driving equipment cools off in that time and necessarily pulls hard when started. In this particular mill one hour had been allowed for "warming up," it being assumed that in that time any troubles in the roll train would show up before the first turn came on. However, an inspection of the demand curve of the drive motor showed a steady rise from the time the first turn started until a maximum peak was reached at about 2 a. m., when all mills were working at capacity. This work load, piled on top of the heavy friction load of the roll train, accounted for the peak around 2 a. m. As the mills warmed up the curve dropped off somewhat. At 7 o'clock the cold-roll mills came on, and being started after the shutdown over Sunday, when the mills cooled off, they added their friction load and work load to that of the hot mills motor.

Careful Alignment Important

The demand curve of the drive motor of the hot mills showed that it took four to six hours for the friction of the roll train to reach constant value. Starting the drive that much earlier would have hastened this condition, but it would not pay, as the consumption of the motor would increase and tend to counteract the reduction in the demand. Three hours for warming-up was found sufficient to flatten the curve. Likewise by allowing the cold-roll mills a warming-up period of one hour the peak of their demand curve, which had been occurring at 7 o'clock, was flattened.

Careful alignment of the roll train at each setting-up time is a big factor in reducing the demand and consumption of the drive motors. The demand curve quickly shows up poor alignment once the minimum necessary idle demand is known. In changing mills each week for years there is liable to be some carelessness in setting up and this is paid for in power bills. The condition of bearings also affects the pull greatly. Brasses that cut and wear badly, scarcely lasting the week out, must be replaced by a better quality. In this plant it was found possible to get brasses that stood up for several weeks without cutting or wearing seriously. Worn and broken brasses cause a low mill and spoil the alignment; low housings or sunken bed-plates cause the same trouble. These troubles all show up seriously in the power bills.

Next to the hot-mill motor the cold roll motors were the largest users of power in the plant under consideration. As the mills are generally allowed to run several weeks without changing rolls worn bearings may develop and spoil the alignment, running the power demand considerably above normal. When some quality of sheets are being cold rolled it is the practice of the cold roll foreman to use running water on the roll necks to cause an uneven expansion of the rolls and give the desired contour. By cooling the necks below a good running heat, however, the water greatly increases the friction and causes the demand curve to mount rapidly. For

(*Continued on Page* 613)

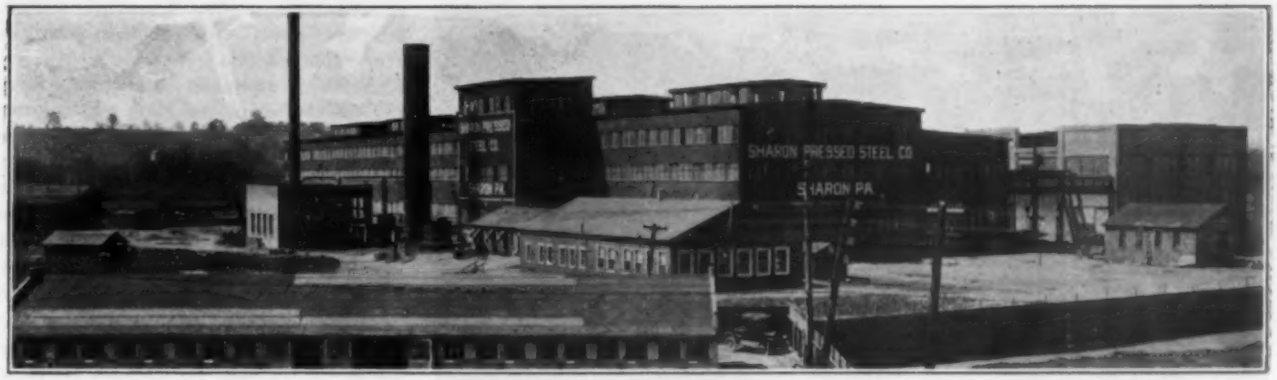


Fig. 1—General view of the Sharon Pressed Steel Co.'s plant, Sharon, Pa. The steel building in the center is occupied by the pressing department

Making Pressed Steel Automobile Parts

ADEQUATE production facilities, an efficient organization and a sound business policy are essentials in any line of manufacturing, and particularly in the pressed metal industry. With the importance of these factors in mind, officials of the Sharon Pressed Steel Co. in July, 1920, undertook the making of pressed steel products. Its plant is located on the outskirts of Sharon, Pa., and is served by the Pennsylvania, New York Central and the Erie railroads.

The plant originally was built in 1916 by the Knox Pressed & Welded Steel Co. During June, 1917 it became the property of the Blaw-Knox Co. Two years later a company known as the Slick-Knox Co. acquired the site and buildings, purchased additional acreage and built a new machine shop and an assembling shop. A view of the plant is shown in Fig. 1. At the time of its acquisition by this company, plant equipment included four 15-ton cranes and two wall cranes, and one 1000-ton, one 500-ton, one 125-ton and two 80-ton presses, all of the steam hydraulic type.

While under the management of this company additional equipment was added, including a 4000-ton press a 300-ton power press, a 250-ton steam press, a 125-ton power press, and a number of hydraulic and power presses.

Equipment Suitable for Wide Production

The plant as now operated by the Sharon Pressed Steel Co., therefore, includes a wide variety of machinery and tools used in the manufacture of automobile and truck frames, industrial trucks, roofing for railroad cars and automobile accessory parts, including brake drums, step hangers, clutch plates, etc. Some of the products made by the company are shown in Fig 6.

The main building is of steel construction, 113 x 500 feet, consisting of two bays with window frames and sashes of steel. The main bay, 72 x 500 feet, is occupied by the pressed steel department; the secondary bay, 40 x 500 feet, houses the heat treating and hydraulic forging departments, both bays running north and south. A view of the pressing department is shown in Fig. 2. Built at right angles to the pressed steel department, as shown in Fig. 1, is the assembly building in which

FIG. 2—MAIN BAY IN THE PRESSING DEPARTMENT. THE BAY TO THE RIGHT HOUSES THE HYDRAULIC FORGING AND HEAT TREATING DEPARTMENTS

Fig. 3—Blanking press, which in one operation, stamps out the rails used for pressing into automobile frames

Fig. 5—Method of attaching corrugated car roofing and siding

Fig. 4—Trailer for heavy duty service is fabricated of pressed steel with the exception of the wheels and flooring

is housed the welding department. Oxy-acetylene and electric welding processes are employed and each has its special application, depending upon the form and thicknesses of the parts and the use to which the finished article is to be put.

All material is unloaded from cars which are shifted in one end of the main building over a siding depressed four feet below the level of the floor line. When the finished product is to be shipped it is loaded directly into cars along the side of the assembly building where trackage facilities of a similar character are provided. The direct routing of the various commodities through the plant eliminates congestion in any of the departments and provides for a continuous movement of the work as it progresses from one stage of fabrication to another.

Frames for automobiles are made from steel sheets. The first step consists of blanking and is performed in one operation on an electrically driven press, shown in Fig. 3. The blanks are transferred to a 4000-ton press. which, by means of dies, forms them in one operation into channel-shaped side rails. The forging press is 27 feet long and is operated hydraulically. Side rails of lighter structure are formed by a press capable of exerting 1000 tons pressure per square inch. Two accumulators located in one end of the machine shop provide 2500 pounds pressure per square inch in the lines leading to the presses. Individual intensifiers for increasing the pressure are installed at the various presses throughout the plant.

Certain types of automobile frames made by the company are heat treated after the forming operation and when this is the case, the process is carried out in oil-fired furnaces located in the forging bay. The temperature of the furnace is controlled pyrometrically. Each rail is tested for brinell hard-

ness at three different locations for the purpose of determining the uniformity of the product and is then piled on a truck designed by the Sharon company to be transferred to the assembly department. Here the cross members and braces are riveted to a pair of rails and after a thorough inspection the frame is ready for shipment. The cross members are formed on the presses shown in Fig. 7.

Cold rolled strip steel is used in the manufacture of clutch plates. The practice as followed by this company consists of blanking, perforating and flattening. In connection with the perforating process the size of the holes must be within 0.002-inch of the specified diameter while each disk is made on a tolerance of 0.005-inch for flatness. In the production of step hangers, which are used for supporting the running boards of automobiles, the various steps consist of blanking, forming, perforating, and bending to shape. They are perforated on jigs in one operation the diameter of the holes being made on a tolerance of 0.0156-inch.

A trailer constructed of steel throughout with the exception of the wheels and flooring also is fabricated by this company for heavy duty service in iron and steel plants, warehouses, etc. A view of this truck is shown ih Fig. 4. The frame is made of 4 7/16-inch channel sections, pressed from ⅛-inch steel plates. The side rails fit into a one-piece steel corner channel which is pressed to a 6-inch radius and punched with a hole in the top flange for a stake pocket. Two 3-inch steel channel sections, running lengthwise, are offset and riveted to the end rails.

One of the latest products to be developed by the Sharon company is corrugated box car roofing and siding. These are made of heavy gage black sheets, coppered or galvanized. In ap-

Fig. 7—A battery of electrically driven forming presses in the pressed steel department used extensively for forming cross members of automobile frames

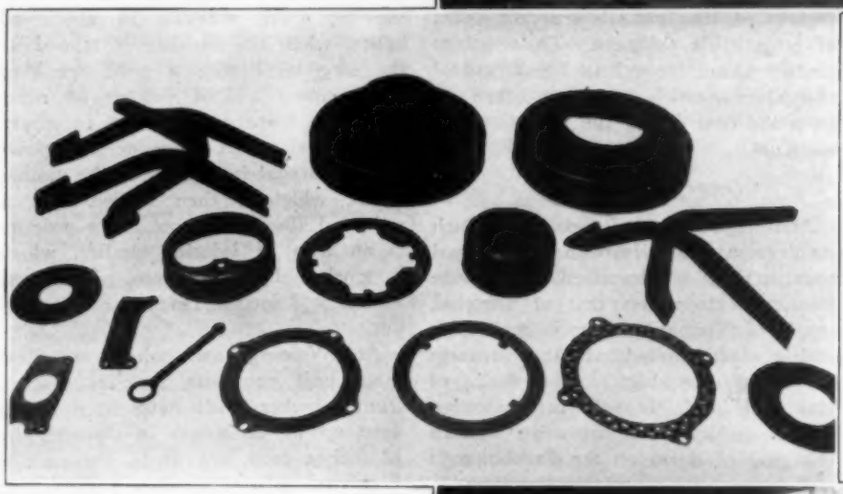


Fig. 6—Step hangers, brake drums, clutch plates, etc. used in the construction of automobiles

Fig. 8—Machine shop equipment embraces a wide list of tools for machining the various dies used throughout the plant

plying, the heavy gage sheets are lapped one corrugation and riveted to the top frame, being strengthened further by reinforcing clips pressed to the contour of each corrugation. A view of this type roofing is shown in Fig. 5.

All dies used in forming the various products are purchased in the rough casting and are machined to the desired contour. The machine shop, shown in Fig. 8, is equipped with shapers, planers, lathes, milling and boring machines, and is served by an electric traveling crane. The building, 72 x 250 feet, parallels the pressed steel department and the space between the two serves as a stock yard for storing tool and other steel supplies used in connection with plant operations. The yard is spanned by an 18-ton electric crane. The railroad track, over which inbound material is brought into the pressed steel department and unloaded, also extends across the stock yard and terminates inside the machine shop. In addition the machine shop and pressing department are connected by a service track.

Officers of the company are: H. W. Torney, president; E. L. White, assistant to the president; A. E. Swan, general manager; W. A. Groetzinger, assistant general manager; T. A. Pierce, assistant treasurer; and R. B. Reid, sales manager.

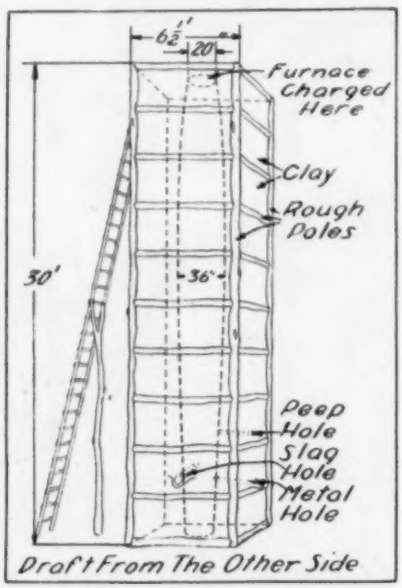
Making Iron by Crude Methods in China

INTERESTING sidelights on some of the native methods of smelting iron ore in China appear in a report on "Mining, Smelting and Molding," recently prepared by the bureau of economic information, Republic of China, at Peking. According to Thomas T. Read, in certain parts of China iron ore is mined through shallow or rectangular shafts, and is broken into small pieces and hand sorted into several grades, which are sold to the smelting plants. Here it is mixed with 50 per cent of its volume of coke and packed into cylindrical crucibles, 5 inches in inner diameter and usually 45 inches high.

From 250 to 275 of these crucibles are set upright in a 12 x 6 x 4-foot rectangular furnace. Air space is secured at the bottom by a layer of broken crucible, on which is placed a layer of coal. The crucibles are set in place, with coal between them, the front side is closed, and the whole is covered over with coal and allowed to burn by natural draft for three days. The crucibles then are removed and the contents taken out. This operation usually involves breaking the bottom part of each crucible, which now contains an irregular bloom of iron of variable composition, fragments of iron, earthly residues and a certain amount of coke. The bloom is sold to the makers of wrought-iron, the small pieces of iron are sold to foundrymen, and the coke is used in the manufacture of crucibles. It should be noted that the product of this method of melting is not pig iron in the ordinary sense of the word, as it contains little carbon, and is malleable. The bloom is worked into wrought iron by heating in a wood fire and hammering until it is worked down into a rectangular ingot which is then sold, and either manufactured locally into various objects and utensils, or shipped in ingot form to all parts of the country. The small pieces of iron are mixed with coal and placed in crucibles about 7x14 inches and from 50 to 80 of these are placed in a small furnace blown by hand. When the iron is melted, the covering of the furnace is removed, the crucibles are taken out, the contents of several crucibles are poured into one and this is then poured into molds which have previously been prepared with extraordinary skill. In this way various cooking utensils are cast, often of remarkable thinness. The castings contain about from 5 to 7 per cent of phosphorus which has been taken up from the coal during the reduction and remelting.

Other Methods Used

Another method of smelting, which involves a blast furnace of unusual construction, is described by Moore Bennett. He writes that at Tunghai, south of Yunnanfu, iron is melted in rudely constructed blast furnaces about 30 feet high. The wall, of clay and brick, is held in a wooden frame, which supports a wooden charging platform on top as shown in the accompanying illustration. The interior diameter is about 36 inches at the widest part, tapering both ways to about 20 inches. As a rule no blast except the natural draft is used. The furnace is charged with equal layers of coke and magnetite mixed with coal and is fired from the bottom, the fire being replenished from the top. At intervals of about 50 hours, when the furnace is tapped at the slag level with a pole, the slag is examined and if judged of right color, the furnace is allowed to empty itself of slag. A layer of fine powdered charcoal is thrown on the molten metal, which is then stirred with a pole and allowed to cool. The product is an iron of inferior quality, which is worked by hand into pigs about 10 x 4 x 2 inches, ready for the market.



DRAWING OF SIMPLE BLAST FURNACE USED AT TUNGHAI, YUNNAN, CHINA

At Weiningshow, where a great many cast iron pots, in sizes ranging from 6 inches in diameter by 4 inches deep up to 40 inches in diameter by 12 inches deep, are made, the iron is first cast into pigs, then remelted in a small blast furnace before it is cast. At Pingyihsien on the Kweichow frontier, the iron ore is first roasted or calcined in heaps in open coke ovens, then dropped in water while hot, crushed fine and mixed with powdered coal into balls about 6 inches in diameter. These balls are put into a tall furnace which usually is provided with a blast worked by a waterfall and turbine wheel, revolving horizontally. The interstices between the balls are filled with coke and the fire is started from the bottom. After the furnace becomes hot, the blast is turned on and the furnace kept charged to the top for two or three days when the slag is tapped, the furnace allowed to cool and the iron run out into water, which causes it to break into small particles, which are afterwards remelted in small hand furnaces, and before cooling are worked with sledge hammers into marketable ingots.

Burning Fuel Gases Efficiently

Combustion Temperature and Stack Loss Are Important Factors from the Standpoint of Economy—Design and Operation of Gas Burners and the Principles of Continuous Heating Are Discussed

BY H. S. WATTS

BLAST furnace gas has been available, with the production of pig iron, since the advent of the closed-top blast furnace. Similarly, coke oven gas has been collected and used in large quantities at plants where by-product coke ovens are installed. Producer gas, once the most generally-used fuel in steel plants, is now employed on certain operations when there is not enough coke oven gas to meet the heating requirements.

A fuel gas is characterized principally by its chemical analysis. The proportions in which the various constituents are found, bears strongly upon its action in the furnace, its peculiar adaptability to certain operations, and, in general, upon its value as a fuel. Volumetric analyses of typical gases are:

	Per cent
BLAST FURNACE GAS	
Carbon dioxide	12.8
Carbon monoxide	26.0
Methane	0.2
Hydrogen	3.0
Nitrogen	58.0
COKE OVEN GAS	
Carbon dioxide	1.8
Carbon monoxide	3.5
Ethylene	3.0
Methane	34.6
Hydrogen	53.9
Nitrogen	3.2
PRODUCER GAS	
Carbon dioxide	6.2
Carbon monoxide	22.3
Ethylene	0.3
Methane	3.5
Hydrogen	12.3
Nitrogen	55.4

Since all of these gases are derived primarily from coal, it is not unusual that they have practically the same constituent compounds. Carbon monoxide, hydrogen and the hydrocarbons are the heat-producing components. In addition to these, we may note the presence of incombustibles, in various quantities, in the form of carbon dioxide and nitrogen.

Similarity of Gases

The analyses show producer gas and blast furnace gas to be strikingly similar in the large proportion of non-heat-bearing components, in contrast to coke oven gas, which is composed almost entirely of compounds having fuel value. Further, it may be seen that furnace gas has a higher percentage of carbon dioxide than producer gas, while the latter contains more free hydrogen and hydrocarbons than furnace gas. Again, coke oven gas has a small percentage of carbon monoxide, while the other two gases depend largely upon this compound for their fuel values. These variations in composition are due to methods of manufacture.

The gases are mixtures of carbon monoxide, free hydrogen, hydrocarbons and incombustibles. The first three components have stored-up energy in the form of latent heat, which is liberated when they are acted upon chemically by oxygen. When they are brought into contact with air under the proper conditions, combustion takes place. The conditions are intimate contact, high temperature and proper proportion of air.

The chemical reactions are not complex. Carbon monoxide combines with oxygen from the air to form carbon dioxide. Hydrogen combines with oxygen to form water vapor. The hydrocarbons combine with oxygen to form both carbon dioxide and water vapor. Each of these reactions is accompanied by the liberation of heat. When sufficient air is supplied, complete oxidation and maximum heat liberation take place. No other compounds are formed, in considerable quantities, in the process of combustion. The products of perfect combustion contain these two gases, and in addition, the nitrogen content of the air used for combustion, and the carbon dioxide and nitrogen present in the original fuel. The greater portion of the liberated heat is immediately effective in raising the temperature of the products of combustion. Part of the heat may be re-absorbed or dissipated to the furnace walls. The temperature to which the remaining heat is able to raise the products of combustion is called the combustion temperature.

After being heated, the combustion gases pass through the furnace and give up heat, either directly to the surface where the heat is desired, or indirectly by heating the refractory walls which, in turn, radiate heat to the desired location. The combustion gases then pass to the stack at a temperature considerably above that of the surrounding air. The sensible heat of the exit gases, added to the latent heat of the unburned constituents, is called the stack loss.

Vital Points of Combustion

Speaking generally, from the standpoint of combustion, there are two vital points in this operation; namely, the combustion temperature and the stack loss. While the primary object of combustion is the liberation of heat, the ultimate usefulness requires the transfer of this heat to the desired surface. The rate of heat transfer always is proportional to some function of the difference in temperatures of the bodies exchanging heat. Manifestly, increased combustion temperature results in increased rate of heat transfer which, in turn, results in increased furnace capacity. The combustion temperature of a gas sometimes determines whether or not it may be employed on certain operations, particularly where the receiving body is to be kept at a high temperature. Naturally, the combustion temperature must be maintained in excess. The stack loss is the only considerable loss directly attributable to combustion. From the standpoint of economy, this should receive primary consideration.

For various reasons, it is almost impossible to derive the real temperature of combustion from the gas analysis. The so-called theoretical temperature of combustion is sometimes used in comparing gases, and for relative values, this method gives satisfactory results. This is the temperature which would be obtained if all the heat liberated were used to heat the products of combustion. The dominant factor affecting the combustion temperature, is the fuel gas composition, since this largely determines the heat available and the weight of the products of combustion. High combustion temperature is favored by high proportion of combustibles in the fuel gas, because of the greater heat available for a given quantity of combustion products. We may naturally expect a high combustion temperature with coke oven gas, practically free from incombustibles, compared

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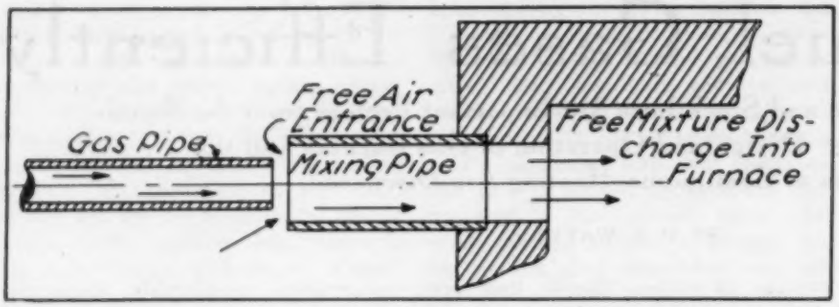


FIG. 1—DIAGRAM OF AN ASPIRATING TYPE GAS BURNER IN ITS SIMPLEST FORM

with furnace gas, containing less than 30 per cent of its volume in heat-bearing constituents.

Air Regulation Is Important

The proper regulation of the air supply also promotes high temperature of combustion. For every gas, there is a theoretical quantity of air required for complete oxidation, which may be calculated from the chemical analysis. The nearest approach to the theoretical quantity of air, which results in complete combustion, will produce the highest temperature of combustion. An excess of air simply adds to the weight of the furnace gases and so reduces the temperature, while insufficient air supply results in incomplete combustion, reducing the heat liberation and, consequently, the temperature of combustion. The quantity of air actually used may be closely checked by analysis of the stack gases if the fuel gas analysis is known. Due allowance must be made for the water vapor formed in the furnace by the combustion of hydrogen, since this is condensed in the sampling process and does not appear in the analysis of the stack gases.

The rapidity of combustion increases the combustion temperature. The concentration of the chemical reaction in a small space decreases the percentage of heat dissipated from the flame, and lessens the divergence between the theoretical and actual combustion temperatures. Thorough and proper mixing is necessary in order to produce this rapid oxidation. In extreme cases where the mixing is slow, and the gas and air do not come into intimate contact until they have traversed a considerable portion of the furnace, the increased radiation from the long flame reduces the temperature of combustion. The combustion temperature increases the rapidity of combustion; hence there is a reciprocal relation between these two varying factors.

The presence of unsaturated hydrocarbons in the fuel gas may have a peculiar effect upon the combustion temperature. These compounds present carbon and hydrogen joined together in unstable equilibrium. On entering a high temperature region, the unsatisfied carbon proportion releases itself from the gas, emerging in carbon's only possible free state, the solid. The incandescence of this body increases the radiation from the flame. In general, because of their high calorific power, the presence of unsaturated hydrocarbons, or illuminants, increases the theoretical temperature of combustion; but, because of the increased radiation, may increase also the divergence between the theoretical and actual combustion temperatures.

The second item of vital importance in the burning of gases, is the stack loss. Its proper control results in the reduction of waste. This loss may be closely calculated if the analyses and temperatures of the fuel and flue gases are known. It is numerically equal to the product of the weight, specific heat and temperature of the stack gases, plus the heating value of the unburned constituents. The composition of the fuel gas once more enters as the dominant factor. A high percentage of incombustibles in the fuel gas naturally increases the stack loss. Further, the presence of water vapor and carbon dioxide in the fuel gas increases the specific heat of the waste gases and, consequently, the stack loss. This is aggravated to a greater extent with high stack temperatures, since the specific heats of these two components increase more rapidly with rising temperature than does the specific heat of nitrogen.

Factors Which Affect Stack Temperature

In general, the regulation of the stack temperature is more properly a function of the furnace than of the combustion process. It is largely dependent upon the ability of the furnace to extract the heat of the furnace gases. The nature of combustion, however, may, to some extent, affect the stack temperature. The use of the long flame and delayed combustion causes an increase in stack temperature. Since delayed combustion also causes a decreased combustion temperature, certain conditions may cause an increased stack temperature and a decreased combustion temperature simultaneously. This is clearly exemplified in gas-fired boilers, where with a given gas consumption, the rear or stack temperature will be lowered when the combustion temperature is raised. This statement may be subject to criticism for high rates of driving, but holds steadfast for normal operation.

The proper regulation of the air supply is necessary if the stack loss is to be maintained at a minimum. Deficient air supply results in incomplete combustion, and the consequent waste of fuel to the stack. Excessive air increases the weight of the furnace gases and thus increases the stack loss.

In general, factors which largely control the combustion temperature are equally effective upon the stack loss. Conditions which promote high combustion temperature, likewise cause low stack loss. Again, it is evident that there is an inter-relation between the two, the combustion temperature, to some extent, affecting the stack loss.

Value of Gases

Gases are sometimes valued commercially according to net calorific power. If it were possible to reduce the temperature of the stack gases to that of the atmosphere, this valuation would be more consistent. Unfortunately, this operation is not practicable, and combustion is always accompanied by a stack loss. The calorific power of a gas is a direct measure of the heat liberated in the furnace under the best conditions, but the composition of the gas largely controls the quantity of heat passing out with the waste gases, other conditions remaining the same. Each gas has an inherent stack loss. The difference between the net calorific power and the stack loss gives the heat available, and this figure should be used in commercial valuation. Naturally, this is dependent upon the stack temperature. It then appears that specific conditions affect the relative value of gases on various operations. Fig. 2 shows the per cent of net calorific power available for the three gases, with various stack temperatures. This shows that the effect of incombustibles on stack loss is accentuated by increased stack temperatures. In view of the foregoing, it is natural to expect the wide divergence of points representing high stack temperature conditions, and the close approach to a common value, at points representing low stack temperature conditions.

From the study of the chemical

aspects of the case, it has become evident that the most important problem in gas combustion relates to the manner in which the air and gas are brought into contact. It is not sufficient, simply, to discharge into the furnace the proper quantities of air and gas. It is necessary that these be brought into contact in such a manner that chemical union may occur.

How Gas and Air Are Mixed

At least three general methods are employed to bring the gas and air into direct contact. The two fluids may enter the furnace or combustion chamber through separate ports at relatively low velocities. In this case, at the beginning of the travel across the furnace, the air and gas pass in separate lanes, mixing taking place only at the plane of contact between the lanes. The combustion along this surface causes a disruption of the stream line flow, and the speed of combustion may be accelerated continuously until the gases reach the outlet port. By means of bridgewalls and irregularly-shaped roofs, the stream line travel may be further broken, further increasing the speed of combustion. The air, which is heavier than most gases, may be introduced above the gas, and after entrance, its general downward travel causes it to engage the gas and cause further mixing. This general method of operation produces what is termed the "lazy flame." Its chief recommendation is long and successful usage, and ease of manipulation. It has the advantage of producing the "mild" or "soft" flame, and of producing a long flame, resulting in direct radiation from the flame to the steel over all sections of the furnace. In some cases, particularly in slab furnaces, the flame also finds its way under the steel, resulting in direct radiation to the under side. The greatest objection to this method of operation is that it causes delayed combustion which, as we have seen, results in high stack temperature and high stack loss. The rather indifferent mixing frequently permits incomplete combustion, although an excess of air may be supplied to the furnace at the same time. In spite of this disadvantage, it is difficult to dislodge this method of operation.

Another method of introducing air and gas provides for the impinging of the two streams upon each other at high velocities. This disturbance causes a random motion of the elementary volumes of which the air and gas are composed, and increases the probability of direct contact. To more fully carry out this principle, the air and gas are sometimes divided into a number of impinging streams, causing complete mixing in a shorter travel.

Velocity an Important Factor

The last of the three general methods employs the eddy-flow principle to cause the mixing action. For every gas or mixture of gases, flowing through a given conduit, there is a critical velocity which marks the change from streamline flow to eddy or turbulent flow. At lesser velocities, the mass of fluid proceeds in straight lines, while at greater velocities, a whirling motion is set up. It is natural to expect that if the fluid mixture passing through the conduit at a velocity exceeding the critical velocity were composed of quantities of air and fuel gas, a thorough mixing action would be obtained. The completeness to which any mixing is carried is dependent upon the line of contact between the components of the mixture. The whirling flow gives a long line of contact in a short travel.

In general, the effort required to produce proper mixing is dependent upon the richness of the gas. Poor gases have a high percentage of incombustibles, and the presence of these inert constituents decreases the probability of direct contact between the important constituents.

The velocity of flame propagation has direct bearing here. Few data are available to indicate in what manner this velocity is affected by the different conditions. It has been demonstrated that the velocity increases with the richness of the mixture and with a given mixture, the velocity of flame travel is increased by such a disturbance as the eddy current. When the combustion gases and air are flowing in the same channel, the surface of combustion will be located at the point where the velocity of the gases is equal to the velocity of flame pro-

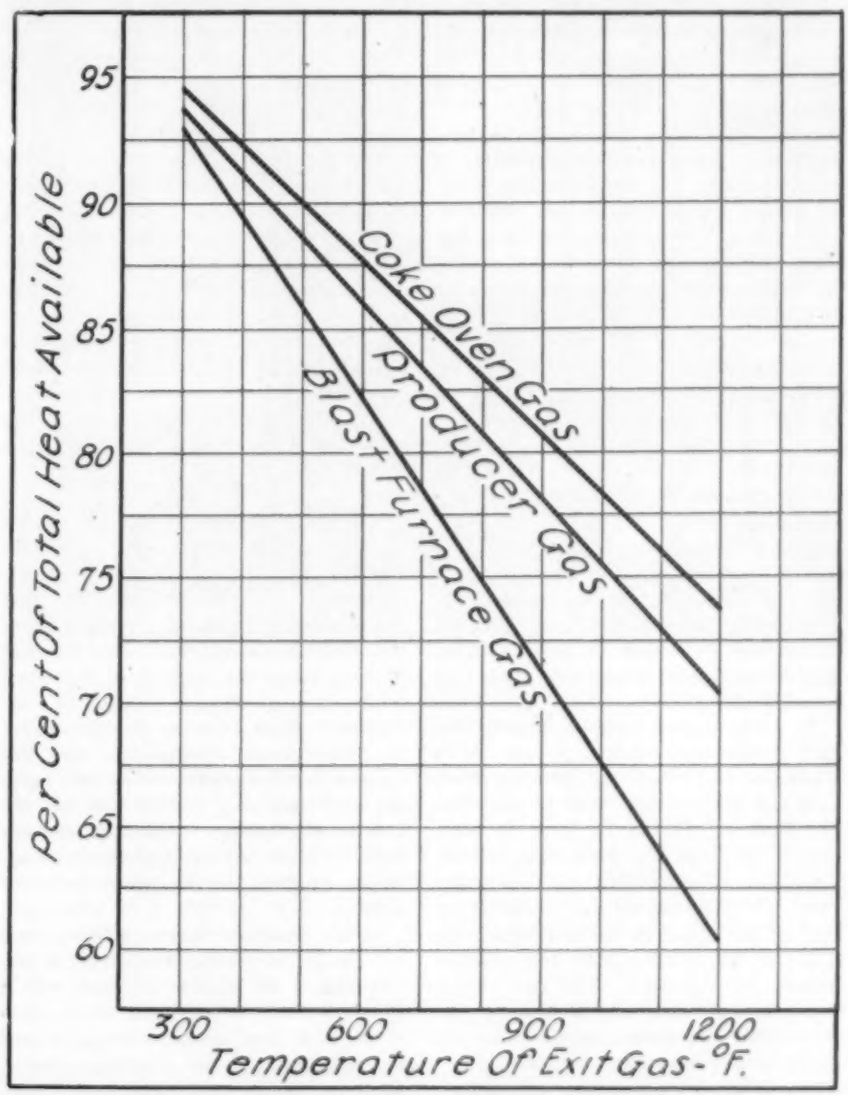


FIG. 2—PER CENT OF NET CALORIFIC POWER AVAILABLE FROM COKE OVEN, PRODUCER AND BLAST FURNACE GASES AT VARIOUS STACK TEMPERATURES

pagation corresponding to the mixture. In applying the third of the general methods of introducing the air and gas, it is necessary to obtain in the channel, a velocity of the mixture in excess of the critical velocity and equal to or greater than the velocity of flame travel. It is advisable to slightly exceed the latter velocity in order to prevent the surface of combustion from traveling back into the mixing tube. Sometimes, a long diverging outlet is formed in the refractory wall of the furnace in front of the burner, in order to prevent the surface of combustion from progressing too far into the combustion chamber.

Combination Affords Mixing Action

Perhaps the best method of mixing the air and gas is to combine the second and third plans, obtaining a mixing action due both to the impinging of streams at high velocities and to the action of the turbulent stream. The air may be supplied to the port or burner under an externally-exerted pressure, or it may be forced in by the impact of the gas, by the stack draft or by both. The specific conditions determine which means is most suitable. When conditions permit, it is advisable to use the aspirating burner which draws in air for combustion due to the impact of the gas mass. Its use is limited, but within its own field, excellent operation is obtained with a minimum of attendance.

Fig. 1 shows a diagram of the aspirating burner in its simplest form. A jet of gas issues from the gas pipe into the mixing pipe which is open at both ends. Due to the impact of the gas stream, air is drawn into the mixer in contact with the gas. The mixture passes through the mixing pipe at a velocity exceeding the critical speed, and a turbulent motion is set up, thoroughly mixing the gas and air components. Passing to the furnace, this homogenous mixture is ready for rapid combustion.

In order to cause approximately free and frictionless entrance of air, it is advisable to eliminate all devices which tend to impede the flow of air into the burner. If the air port is sufficiently large in the beginning, an increase in air port area will not cause more air to be drawn in. If the quantity of air obtained is insufficient, the area of the mixing tube cross-section should be increased. The use of obstructions to vary the air supply, destroys the constant air-gas ratio for variable gas velocities.

Since it is impossible to entirely eliminate friction, as well as not wholly desirable, we must strive to reduce it to a minimum, and provide means for counteracting that part of it which we do not eliminate. It appears that this may be accomplished by variation of the draft in the furnace. The total friction in the burner will be closely proportional to the square of the gas velocity. But the gas velocity is proportional to the square root of the pressure of the gas in the mains. The friction is therefore approximately proportional directly to the pressure in the gas main. Now, if instead of maintaining atmospheric pressure in the furnace, some draft were carried, proportional at all times to the pressure of the gas in the mains, it appears that the friction of the burner would be offset.

Such draft regulation might be easily obtained by a simple addition to the regular balanced draft apparatus, whereby instead of maintaining a predetermined, fixed draft in the combustion chamber, this apparatus would cause the draft to be proportional to the gas pressure in the mains.

The velocity of the mixture must be great enough to prevent the flame from traveling backward through the mixing tube. Since coke oven gas is relatively light and the volume of the mixture large, it would be necessary to have a high entrant gas velocity, in order to obtain momentum sufficient to maintain the required velocity through the mixing tube. Where 2 or 3 ounces per square inch is sufficient for operating this burner with blast furnace gas, a pressure of 4 or 5 pounds would be necessary to obtain the required entrant gas velocity when using coke oven gas.

How Heat Is Transferred

The flame and combustion gases give up heat to the steel and to the refractory roof and walls of the furnace, by convection and radiation. Heat is transferred from the refractories to the steel by radiation. The transfer of heat from the surface of the steel to the inner portions is effected by conduction. Heat transfer by convection is proportional directly to the difference in temperatures of the giving and receiving bodies, and to the area of the surface washed by the hot gases; but it is largely dependent upon the velocity of the gases over the surface.

In the design of boilers, great efforts are made to cause the heat to be transferred by convection, and yet it is not unusual to find that 60 per cent of the total heat absorbed is transferred by radiation. In the heating furnace, upon which no such efforts are made, we would naturally expect the largest proportion of the heat to be transferred by radiation. It is thought that in most heating furnaces, the heat transferred by convection is negligible.

The continuous billet-heating furnace presents some interesting problems relating to heat transfer. The furnace bottom is almost completely covered by long billets which are placed transversely. In the charging operation, as each cold bar is pushed in at the rear of the furnace, the entire charge is advanced, the forward bar having been previously withdrawn and transferred to the mill. The continuous furnace may be described as one in which the steel, as it progresses slowly from the cold end of the furnace to the hot end, is subjected to a gradual and uniform rise in temperature.

In many furnaces of this type, due to careless operation, the temperature of the steel rises but slightly in passing over the first half of the course, and the greater portion of the heating is accomplished in the third quarter of travel. The last quarter is used as a soaking area in which the heat on the upper portions of the steel is allowed to pass to the inner and lower portions. In other cases, we find that the rise in temperature is more uniform over the entire length of steel travel.

Length of Furnace Is Important

Other conditions remaining the same, the length of the furnace determines the capacity. It might be expected that the furnace capacity is limited only by the extent to which the radiant heat function or driving force can be increased. The latter is limited in two ways. At the hot end, the roof temperature must not exceed the fusion temperature of the best refractories. The other limit is measured by the rate at which the steel will allow heat to be conducted through its mass. If the transfer of heat to the steel exceeds the conductance of heat through the steel, there will be a nonuniformity of temperature in the cross-section. If this condition is allowed to prevail for a sufficient length of time, the inevitable result will be the fusion of the steel section. Such operation not only ruins the structure of the bar, but seriously impedes the continuous operation of the furnace. We may therefore state that in a given furnace the capacity is limited by the capacity of the steel to conduct the heat from the upper surface to the inner and lower portions. After this point is reached, the capacity may be increased only by the addition of furnace length. We do not contend that the stack gas temperature cannot be decreased by increasing the length of the furnace, but that the length of the

furnace necessary to produce appreciable stack temperature reductions is so great as to make the addition unprofitable. It seems wise to make the length sufficient to give the desired capacity when the rate of heat transfer from the roof to the steel is near to the rate of heat conductance through the steel.

British Advise Improved Foundry Equipment

At the annual dinner of the Sheffield branch, Institute of British Foundrymen, recently, Oliver Stubbs, Joseph Stubbs, Ltd., Manchester, president of the national organization of which the Sheffield branch is a part, said that foundrymen should overhaul the equipment of their plants during the present period of slow business conditions, and where necessary install new and up-to-date machinery in order to be able later on to increase production and lower costs. Those foundries which are the best equipped and organized will participate first and most extensively in the business revival which is on the way, it was said.

Mr. Stubbs also recommended carrying the policy of, preparation a step further by opening the foundries on days when idle to employes for instructional purposes. Some British foundries have adopted this policy. Lectures accompanied by practical demonstrations are given by the shop executives covering metallurgy, melting practice, molding, etc. Such educational efforts, according to the speaker will make it possible later for British foundries to make both better and cheaper castings.

Announcement was made at the dinner that the University of Sheffield expects to inaugurate a course of lectures on foundry practice dealing particularly with its metallurgical aspect. This course will be under the direction of Dr. Percy Longmuir and Dr. W. H. Hatfield.

Generates Steam by Means of Electric Heat

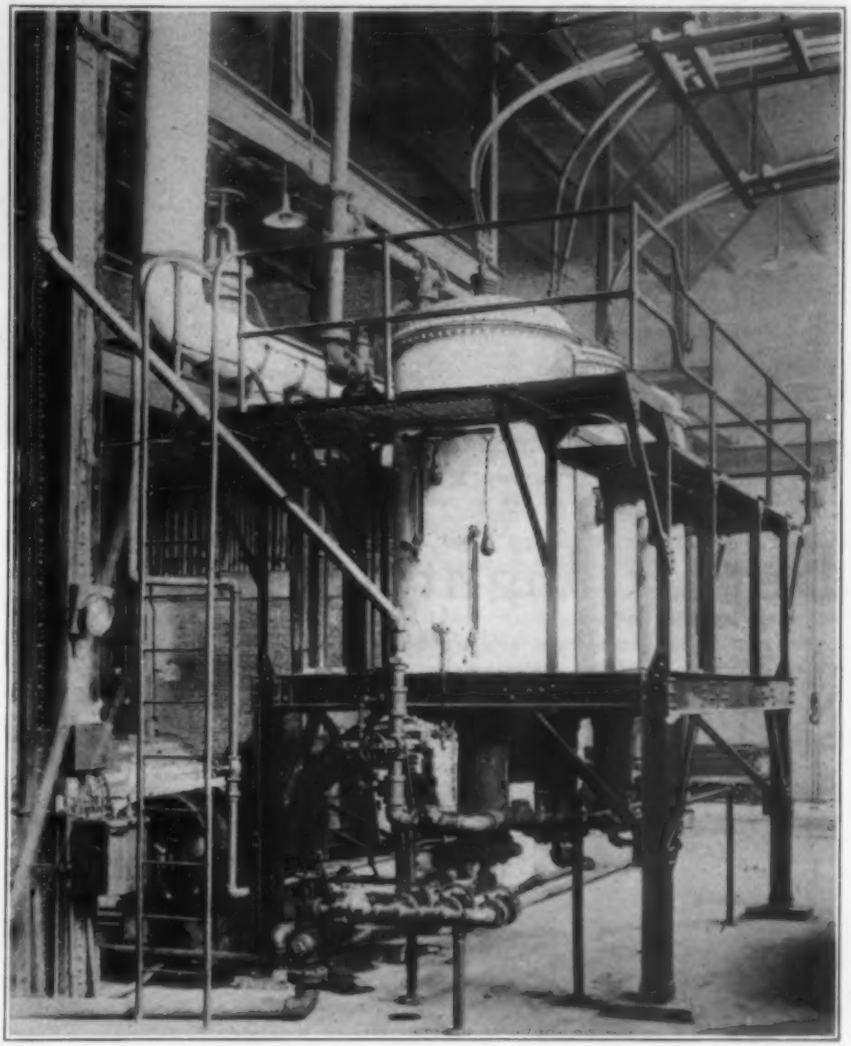
An electric steam generator utilizing the principle of heating produced by resistance to flow of electric current through water, has recently been placed on the market by the Electric Furnace Construction Co., Philadelphia. Steam is generated at any specific pressure by means of high tension alternating current led directly through electrodes of special design into the water to be evaporated. A vertical tank is used, constructed according to approved boiler practice.

The amount of steam generated, the pressure and amount of electric power used are governed by the height of water in the vertical tank. This is controlled and regulated by standard valves, rendering the whole operation practically automatic.

Any water that is suitable for the ordinary boiler is satisfactory, and it is not necessary to install water softening apparatus. Either condensate or raw water can be used or a mixture of the two. No part of the steam generator is exposed to a higher temperature than that of the steam, and the only parts subject to slight wear are the electrodes, which may be replaced annually at a nominal cost. There is no scaling or erosion of tubes or shell due to the high temperatures involved in the generating process, as is the case when other sources of heat are employed.

According to the manufacturers, the most important application of the steam generator will be found in industries located within the range of hydroelectric power plants, where use may be made of surplus energy or water running to waste. Due to the inability of ordinary power consumers to operate 24 hours per day the load factor at most power plants runs from 60 to 80 per cent. Complete use may be made of this off-peak load, which is not now used, by the installation of the steam generators, and the load factor of the power station can be considerably improved. The generators operate with 98 per cent thermal efficiency and unity power factor. The generator is flexible and it can be paralleled in with existing coal or oil-fired boilers and only operated on off-peak loads, when cheap power can be had.

A number of these large generators have been in successful operation for some months and already over 100,000 kilowatts of generators, representing 10,000 boiler horsepower, are running or being installed.



ELECTRIC STEAM GENERATOR USING 6600-VOLT, 3-PHASE CURRENT AND RATED AT 2000 BOILER HORSEPOWER, INSTALLED AT THE PLANT OF THE SHAWINIGAN WATER & POWER CO.

Fig. 1—This system replaced the one shown in Fig. 2. Note the clearness of detail and absence of dark shadows. Total production under this system was increased 12.2 per cent, at an increase in lighting expense of only about 2.5 per cent of the payroll

Better Lighting Increases Production

BY WARD HARRISON, O. F. HAAS AND F. W. DOPKE

SCIENTIFIC investigation has proved conclusively that one can see more and also see more quickly with increased illumination. The question than arises: "How many foot-candles of illumination should be supplied for a given operation to be conducted most economically, taking into account both the cost of the lighting and the advantages derived from it?" Tests have been made in Chicago and in other cities to obtain information as to the desirable intensities of artificial illumination in the industries. The Dover Mfg. Co., Dover, O., manufacturers of electric, gas, and ordinary sadirons, desired to conduct an investigation in its Dover plant for the purpose of obtaining further practical data showing the effect of good lighting on efficiency of production in that particular class of work.

The investigation was conducted in the press department, a rectangular area having dimensions of approximately 29 x 112 feet. This department is equipped with five punch presses, two milling machines, eight drill presses, one tapping machine and one tool grinder. The chief operations performed on the punch presses consist of blanking, forming, shearing, reforming and punching hoods, while the work performed on the drill presses consists of drilling and tapping iron castings. The milling operation consists of milling the bottom of the electric and gas irons.

Little Daylight in Shop

No skylight is provided in the press department which is partitioned off from other parts of the plant in such a manner that there are no windows having an outside exposure even on a court, and therefore virtually no daylight reaches the department. The average daylight illumination at noon on a sunny day is less than 0.1 foot-candle. The original lighting system here consisted of 32 outlets, 22 of which were equipped with 50-watt lamps used for local lighting; one with a 100-watt lamp also for local lighting, and nine with 100-watt lamps for general illumination. Only two of these latter were equipped with reflectors. The lamps for local lighting were equipped with wire guards and in a few cases homemade tin glare shields were used. The average illumination on the working plane was 0.7 foot-candle, and the illumination supplied at the tool points varied between 0.3 and 12 foot-candles, the average being about 4 foot-candles.

As originally planned, the investigation called for a comparative test with the old system and with a general overhead lighting system consisting of 27 standard dome reflectors and bowl-enameled lamps. It also was planned to vary the levels of illumination with the new system, noting the production under each level and checking back at intervals to the old system. However, a partial shutdown of the plant somewhat curtailed the scope of the investigation, and this latter idea was abandoned. The data secured, therefore, simply indicate an answer to the first question, namely, the comparison of production under the old or original system with the average production results as found under the new system, which afforded an average illumination over the test period of 13 foot-candles. With the largest lamps in the test, illumination was approximately 22 foot-candles.

Investigation showed that 98 distinct operations were performed in the press department while the experiment was in progress. However, a

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great many minor operations were made so far as the test was concerned, that is, operations which were not carried on for more than three or four hours under each of the two systems of lighting. Eliminating these 20 operations remained from which definite conclusions were warranted as to production changes under the original and new systems of illumination.

Of the 20 operations it will be seen from the accompanying table that 15 showed increases in production, four indicated decreased production and one showed no change. The operation which showed neither loss nor gain was one which required no special discrimination of details. It consisted merely of picking up an iron, laying it in a jig, pulling a lever for drilling, and then removing the iron. Operation No. 6-G-42½, which showed an increase in production of 210 per cent, required close discrimination. It consisted of accurately locating the center of an iron casting with dividers and then center punching for drilling. The four individual operations for which decreases in production were indicated come under the head of drilling operations or of tapping operations.

Results May Be Taken As Average

It will be noted in the tabulation that in each of these two groups are several operations carrying separate numbers and listed separately; for example, separate operation numbers are given for drilling a hole in a certain part and drilling another sized hole or drilling a hole in a differently sized iron. As a matter of fact, if all drilling operations are placed in one group and likewise all tapping operations in one group, it will be found in each case that the gains in production more than offset the apparent losses. In other words, the precision with which the data could be recorded to the nearest half hour and the variation in the quantity of the material worked upon were such that it is dangerous to place too much weight on the exact percentage of gain or loss indicated for any one operation. When all of the figures are averaged to obtain the production of the shop as a whole, many possible sources of error, such as those due to recording time and

How Production Was Increased

Summary of Investigation

Plant	Dover Mfg. Co., Dover, O.
Product	Electric, gas, and ordinary sadirons for home and laundry use
Test area	Press department, 29 x 112 feet
Press department personnel	Foreman, 10 operators, three helpers
Old lighting equipment	Twenty-two 50-watt clear lamps—no reflectors; ten 100-watt clear lamps—two with reflectors; average illumination, 0.7 foot-candles; average illumination at tool point, 4 foot-candles
New lighting equipment	Twenty-seven standard dome reflectors with bowl-enameled lamps; average illumination, 13.5 foot-candles
Cost of old lighting system per year*	$290.00
Cost of new lighting system per year*	$800.00
Increased expenditure for lighting	$510.00
Payroll per year	$20,000.00
Percentage of increased lighting cost to payroll	2.50
Percentage increase in production due to modern system of illumination	12.20

*Cost of energy, 4 cents per kilowatt-hour.

Production Data for Period of Investigation

Factory operation No.	Factory operation	Pieces per hour Old	Pieces per hour New	Change in production, per cent	Time per operation, hours
1-32	Drilling	133	164	23	49⅛
1-33	Tapping	293	258	—12	32
6-G-11	Milling	54	60	11	57½
6-G-11½	Spotting	188	222	18	14⅛
6-G-42½	Punching	42	130	210	20
6-G-43	Drilling	59	52	—12	27
6-G-44	Tapping	82	108	32	16
62-3	Drilling	420	519	24	31⅛
62-4	Tapping	490	609	24	34
72-3	Drilling	255	255	..	194½
622-4	Drilling	535	464	—13	130½
901-5	Blanking	1517	1652	9	48
911-1	Blanking	916	1034	13	48
911-2	Shearing	1074	1800	68	33
921-1 and 2	Blanking	849	962	13	43½
921-4	Reforming	1043	1534	47	28¾
921-5	Punching	1125	1296	15	25
922-4	Tapping	447	399	—11	38½
C-97	Blanking	1495	1517	1	10
....	Plugging	90	98	9	118½

FIG. 2—ORIGINAL LIGHTING SYSTEM IN THE PLANT OF THE DOVER MFG. CO. TIN SHADES AND BARE LAMPS WERE USED

to variations in materials are equalized.

In determining the percentage increase in efficiency of the shop as a whole, each operation was weighted in proportion to the total number of hours devoted to it. It was considered that the relative shop importance of any one operation was simply the ratio of the number of hours spent on the operation during the investigation to the total number of hours spent on the 20 operations tested. Thus it may be seen that the short time operations have little weight, whereas the operations which were worked upon for a long duration are given greater weight. The results of the investigation, with the operations weighted as described above, indicate that at an increased expenditure of approximately 2.5 per cent, production in the press department was increased 12.2 per cent.

One Operation Eliminated

In several operations sufficiently accurate data were not obtained to warrant tabulation in this summary, but these also showed increased economy in operation. For instance, under the original lighting system, it was necessary to drill and tap two pieces used in making the electric irons, load them on trucks, assemble them in an area where there was daylgiht, and then carry them back into the shop for further tapping. Under the new system of illumination it was possible to assemble the pieces at the machines. Again, it was the custom for several men to work on Saturday afternoon in cleaning up the shop. After the new system was installed, it was found that the department was kept in a more orderly condition during the week and, therefore, it was no longer necessary to have the men work overtime to clean up.

Some of the comments made by the men in regard to the increased illumination were "room appears to be larger;" "more pleasant to work under the increased illumination though we could get along with less light." The foregoing tests were conducted jointly by the management of the Dover Mfg. Co., and the engineering department, National Lamp works, Cleveland.

Builds Down-Stroke Multiple Shaper

TO INCREASE the range of multiple gear cutting, the Stevenson Gear Co., Indianapolis, has just brought out a down-stroke model of its multiple shaper, a machine in which the tools are held stationary and the gear blanks are reciprocated past the tools. The earlier and up-stroke model of the shaper was described in the Aug. 4, 1921 issue of THE IRON TRADE REVIEW. In many respects the new machine resembles a vertical shaper or slotting machine in appearance and operation. The principal part of the mechanism is the special tool head which consists of a series of radially disposed tools spaced about the blank to be cut.

As shown in the accompanying illustrations, Figs. 1 to 3, the shaper consists of the multiple tooled head of a ram carrying a blank supporting arbor. Other units are a feed mechanism for feeding the tools in to depth gradually to take successive cuts in the same way as a shaper,

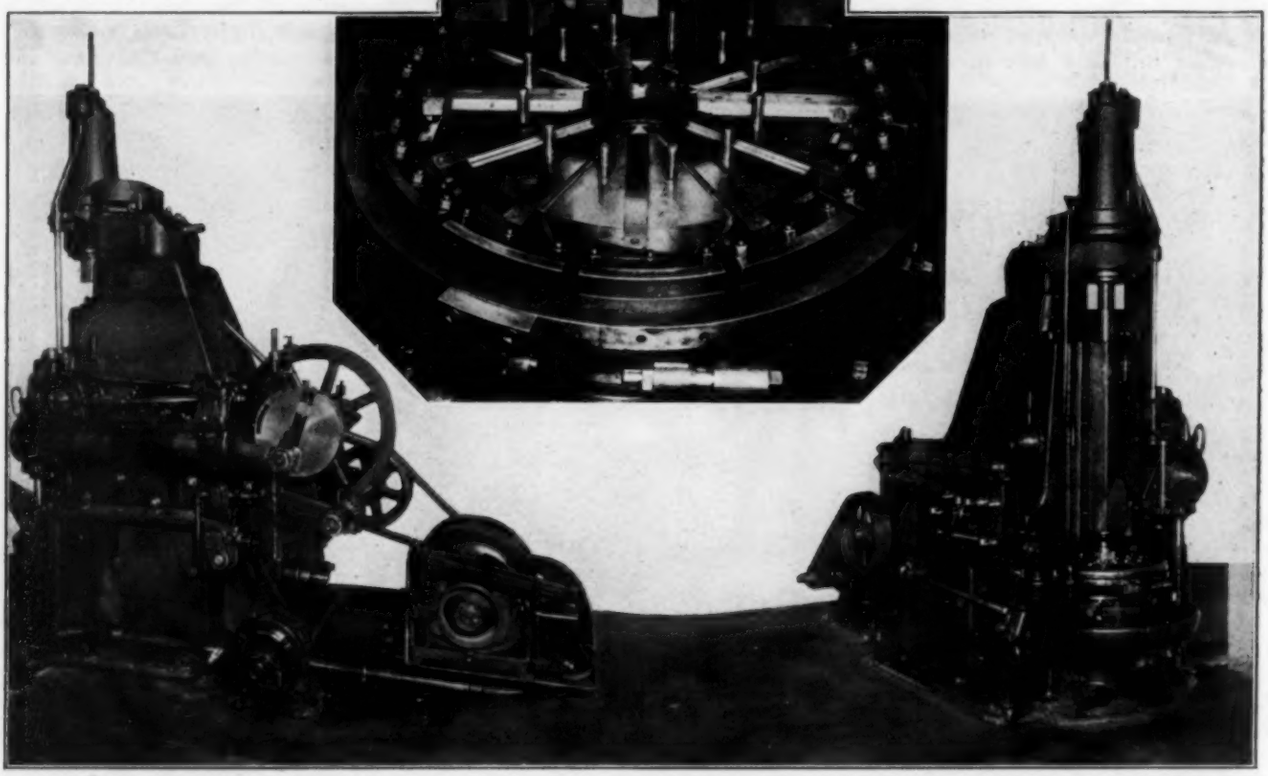


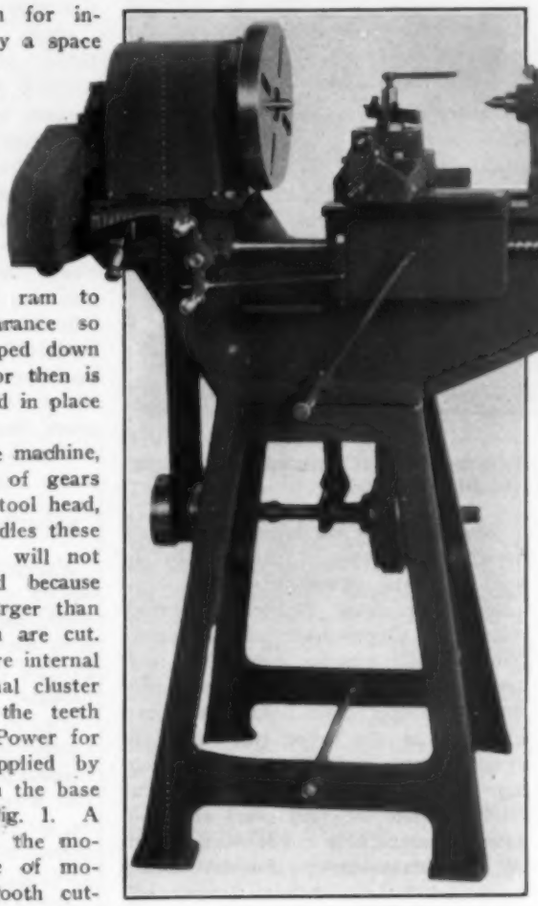
FIG. 1—(LEFT) SIDE AND REAR VIEW OF THE NEW DOWN-STROKE MULTIPLE SHAPER SHOWING THE MOTOR AND DRIVING MECHANISM. FIG. 2—(CENTER) A CLOSE-UP OF THE ARBOR LOADED WITH GEARS AND THE TOOL HEAD WITH COVER REMOVED. FIG. 3—(RIGHT) FRONT VIEW OF THE MACHINE WITH THE GEAR PASSING DOWN BETWEEN THE CUTTING TOOLS

and an indexing mechanism for indexing the gear being cut by a space equal to one tooth at every stroke of the ram. One advantage claimed for the machine is that upon completion of an arbor of gears, the arbor is removed and an arbor loaded with blanks is inserted in its place. Changing of arbors consists of stopping the machine and elevating the ram to provide extra working clearance so that the arbor may be dropped down and removed. The new arbor then is placed in the spindle, fastened in place and the ram lowered.

Contrasted to the up-stroke machine, which handles only classes of gears which will pass through the tool head, the down-stroke machine handles these gears and also work which will not pass through the tool head because some part of the gear is larger than the part on which the teeth are cut. Included in the latter class are internal gears, internal splines, external cluster gears and gears in which the teeth terminate near a shoulder. Power for operating the shaper is supplied by an electric motor mounted on the base at the rear, as shown in Fig. 1. A push button switch controls the motor. Since the entire cycle of motions which composes the tooth cutting operation is automatic, the operator can control more than one machine. The cutting time varies from one to four minutes, depending upon the face width of the blank or stack of blanks being cut.

The tool head, shown in Fig. 2, is almost identical to that used on the up-stroke machine; in fact, the tool bits and important parts are completely interchangeable. In Fig. 2 the head has been partially disassembled to show its construction. It consists of a flat steel disk 30 inches in diameter, provided with a hole at the center and a number of radial grooves cut in its face and in these are arranged the tool bits about the circumference of the gear. Successive feeding movements are imparted to the tools by an annular sectional cam ring. As the gear blank is reciprocating past the cutting tools, the tools are gradually fed in by successive cuts to the full depth of the tooth. At the completion of each stroke of the ram and before the next cut begins, the gear blank is indexed a space equal to one tooth, thereby presenting to each tooth a different tool from the one which made the previous cut.

After the tools have been fed in to the full depth, they are held stationary in that position while the cutting process continues until the gear has indexed one complete revolution thereby giving each tool an opportunity to take one last cut on each tooth. Thus a uniformity of the tooth form is secured even though the tools may not be uniform. Two tool heads are provided for every machine and while one is in use on the machine, the tools of the other are being sharpened and reset ready for use after the tools in operation become dull. Although the multiple shaper usually is classed as a gear cutting machine, it is adapted to the production of all cylindrical products having teeth or grooves such as sprockets, splined shafts, reamers, taps, milling cutters and saws, ratchets and knitting machine rolls.



MANY FEATURES IN DESIGN ARE INCLUDED IN THIS NEW GAP LATHE

Gap Lathe Has Several Novel Features

A new type of small gap lathe recently developed by the Artisan Mfg. Co., Cincinnati, for light work embodies a number of unusual features in construction. Many of the novelties in design are to be seen from the accompanying illustration. A quick change feed box is provided which contains a clutch member for engaging and disengaging the feed by the lever seen below the gap. The double crank handle at the right of the gear box is used for traversing the carriage by hand when working on short jobs close to the face plate. When the carriage is needed near the tailstock end of the bed, this double crank handle may be put directly onto the end of the lead screw extending out beyond its bearing at the tailstock end.

Through the wide range of the gear box, the lathe will cut all standard threads from 8 to 224, also 11½ pipe thread. The reverse gears for obtaining right and left-hand threads are contained within the swinging quadrant at the end of the headstock, this quadrant also containing the compounding gears for the steel cone gears within the gear box. The gap near the headstock will permit the working of stock 16 inches in diameter and the shelf shown below the gap provides a support bearing for the carriage when it is run out over the gap. For angular turning the cross slide may be swivelled at any angle but when set straight, taper dowel pins serve it secure in the correct position. The lathe is 24 inches between centers.

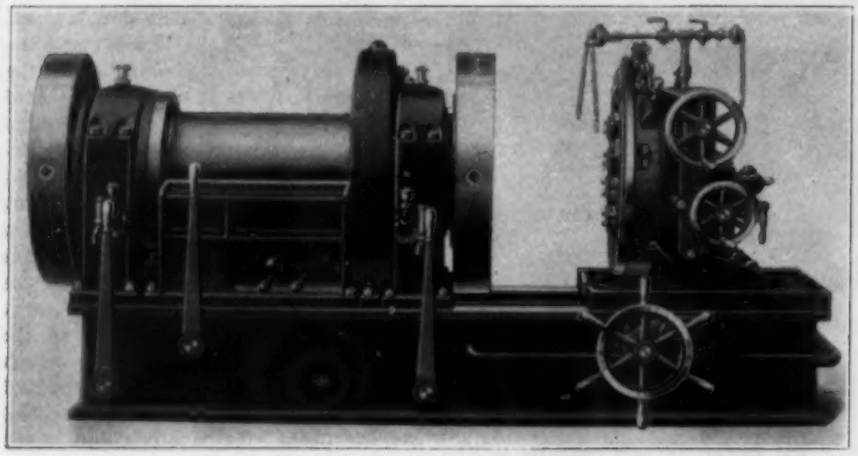
Another interesting feature is the method of driving the lathe. A countershaft mounted to the leg back of the machine may be driven direct from a line shaft or by a motor mounted on the back side of the bed. The operating clutch also serves as a brake. Drive from the countershaft is to a 3-step cone pulley through a belt. When the lathe is driven by a motor, a self-contained unit is provided, which may be moved to any convenient location and connected to an ordinary light socket.

Equalizing Power Demand

(*Continued from Page 600*)

such periods the high points for the rolling demand are often determined as double the normal power requirement. Since heating the rolls by electricity is very expensive, the desired result may be obtained by using a kerosene blowtorch applied to the middle of the bottom roll. If natural gas is available a gas burner would be better. Eliminating the water and using applied heat to obtain the unequal expansion reduces the power demand to normal.

The powdered coal plant, being the next heavy user of power, came in



A PIPE CUTTING AND THREADING MACHINE WHICH WILL HANDLE ALL SIZES FROM 2½ TO 12-INCH DIAMETERS

for its share of investigation. As near as possible all grinding was done at night when the cold rolls were not running. No two pulverizing mills were started at the same time so their demands were not additive. Sufficient coal was ground on Sundays so that no grinding would have to be done when the shift came on at midnight and the mills were warming up. The remaining motors in the mill had less effect, but by eliminating unnecessary friction and operation considerable reduction was effected in the energy consumption.

After one month's running under the improved conditions and with an equivalent production the total power bill for the month showed a reduction of 12 per cent, compared with the previous month, or approximately $24,000 for the year.

Ruggedness Is Feature of Heavy Duty Drill

Outstanding features of a new heavy duty drilling machine built by the Foote-Burt Co., Cleveland, are the simplicity of the general design and the extreme sturdiness of construction. Not only is there an absence of brackets and other bolted on devices, as shown by the accompanying illustration, but a number of parts in the internal mechanism have been eliminated. No telescoping screw is required under the table as the single screw permits a vertical table adjustment of 12 inches without the necessity of providing a hole in the floor. All machine operating levers are controlled from the operator's working position in front of the machine. The drill has a 20-inch swing and has a capacity for drills up to 1½ inches in diameter.

With the head and upright designed as shown, the retaining bolts are held in shear rather than tension. Bending stresses due to present extremely high drilling pressures are taken by the rigid upright, which also is reinforced by the head. Driving power is supplied by a single pully drive through a friction clutch, no countershaft being required. Nine spindle speeds and three feeds are provided, all changes being made through sliding gears. All main bearings are of the roller type while the spindle thrust is carried by a ball bearing. The speed change gears run in an oil bath while the feed gears are lubricated by means of a splash oiling system. A gear-driven pump provides cutting compound.

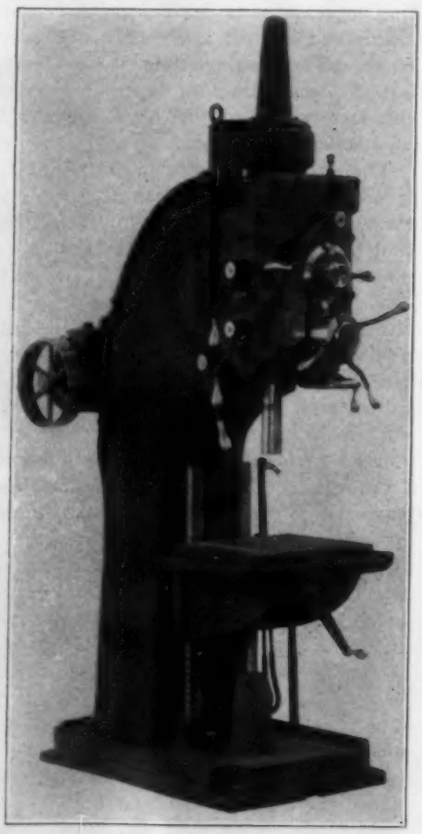
Machine Cuts and Threads Large Sizes of Pipe

A machine which may be equipped for threading and cutting oil well casing and and hydraulic pipe, in addition to ordinary line pipe, recently has been built by the Landis Machine Co., Waynesboro, Pa. The accompanying illustration shows the new machine, which has a range from 4 to 12 inches and may be equipped to thread and cut pipe as small as 2½ inches. Two die heads are employed, a 6-inch head for a range from 2½ to 6 inches and a 12-inch head for a range from 6 to 12 inches. The range of each of these heads is covered by but one set of chasers. The machine is 11 feet long, 5 feet wide and weighs 13,000 pounds.

The carriage which supports the die head, the cutting off tool and the reaming tool is moved either by power or hand. A lever controls the power traverse both forward and backward, automatic stops preventing the die head from coming in contact with the chuck in the forward movement and the carriage from running off the guides in the backward movement. The reaming tool is set to position quickly and locked with a lever. It is fed toward the pipe by means of a hand wheel.

Single pulley drive is provided although motor drive may be substituted using a silent chain and sprocket drive. By shifting levers on the side of the gear box, eight speed variations are obtained in the speed box located under the main spindle. A lever operating a friction clutch permits the operator to start and stop the machine in any position. Both chucks have three self-centering jaws with geared and universal adjustment and the rear chuck is equipped with flange grips for fitting up flanges. With the exception of the main drive gear and its pinion, all gears run in an oil bath. For convenience to the operator, the operating levers are placed on the front of the machine.

Experiments conducted at the Pacific station of the United States bureau of mines on the reduction of iron oxides with various reduction gases, producer gas, oil gas, etc., showed that methane probably does not function actively in the reduction of iron oxides at temperatures up to 800 degrees Cent. To check up this point and to find out at just what temperature it does begin to be active, work is being done on the preparation of pure methane and its application to various oxides of iron.



HEAVY DUTY DRILLING MACHINE WITH OPERATING MECHANISM COMPLETELY INCLOSED

Benzol Buying

Fills Producers Books for Three Months—Coal Tar Products Active

New York, Feb. 28.—Better demand for benzol is coming out from practically all sources and as a result sellers are largely booked up over the next three months. This betterment is also reflected in demand for solvent naphtha and toluol and in both instances sellers assert spot supplies are scarce.

Quotations are strong but unchanged. Pure benzol is holding at 27 to 29 cents, f.o.b. works, in tanks, and 32 to 35 cents in drums, while 90 per cent benzol is quoted at 25 to 27 cents, f.o.b. works, in tanks, and 30 to 32 cents in drums. Toluol is holding at 28 to 30 cents, f.o.b. works in tanks, and 33 to 35 cents in drums, and solvent naphtha at 25 cents in tanks, f.o.b. works, and 28 to 31 cents in drums.

Coke Oven By-Products

	Spot
Per Gallon at Producers' Plants in Tank Lots	
Pure benzol	$0.27 to $0.29
Toluol	.28 to .30
Solvent naphtha	.25
Per Pound at Producers' Plants	
Phenol	$0.15
Naphthalene, flake	$0.07 to $0.08
Naphthalene, balls	.08 to .09
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia	$2.50 to $2.55
(Prices on spot sulphate also quotable on business for delivery over next several months.)	
Contract	
Pure benzol	$0.27 to $0.29
Toluol	.28 to .30
Solvent naphtha	.25
Per Pound at Producers' Plants	
Phenol	nominal
Naphthalene, flake	$0.07 to $0.08
Naphthalene, balls	.08 to .09
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia (12 months)	nominal

Trading in napthalene continues to undergo a lull. The drug interests, the principal consumers, have practically all contracted for their estimated spring requirements, and it is likely there will be little change before the latter part of March or early April, at which time there are usually some purchases to meet last minute committments. Prices are steady at 7 to 9 cents, f.o.b. works, for flakes, and 8 to 9 cents, for balls. These prices apply to both spot and future business. Phenol is featureless and unchanged at 12 cents, government warehouse, and 15 cents, works.

While there is relatively little demand noted, sellers of sulphate of ammonia are booked up over the next two months or so and prices are strong. Sellers are offering material for domestic account at $2.50 to $2.55, f.o.b. works, and foreign account, $2.75 to $2.80, port.

Greater safety in the operation of British industries is indicated by official figures just issued for 1920 showing that in seven important industries coming under the workmen's compensation act, 385,517 cases received payment in 1920 compared to 480,668 in 1913. Owing to increased rates, payments in 1920 amounted to £5,978,009, or approximately 78 per cent more than in 1913.

News of Societies

Past and Coming Meetings of National and Local Trade and Technical Organizations

ANNOUNCEMENT is made of the program for the annual convention of the National Metal Trades association at the Astor hotel, New York, April 17 to 20, inclusive. The first day will be devoted to an executive committee meeting and that of local branch secretaries. Thursday the administrative council will meet and the local secretaries will continue their conference. The convention sessions proper will be held Wednesday and Thursday. The annual banquet will be held at 7 p. m., Wednesday, and a theater party for the ladies accompanying members has been arranged for Wednesday afternoon.

* * *

Railway Exhibit Planned

Preparations are going forward for the annual exhibition of the National Railway Appliances association at the Coliseum, Chicago, March 13-16, inclusive. Space for this exhibit will include the entire Coliseum.

* * *

Discusses Stainless Steel

At the annual meeting of the steelworks section of the Engineers Society of Western Pennsylvania, held Tuesday, Feb. 28, at the William Penn hotel, Pittsburgh, a paper entitled "Stainless Steels" was presented by C. M. Johnson, director of the research department and chief chemist of the Park works, Pittsburgh, of the Crucible Steel Co. of America. Mr. Johnson gave a brief history of stainless steels, dealt with its composition, its resistance to oxidation at high temperature, various uses, etc. Samples of sheets, bars, wire cooking utensils, acid-resisting springs made from stainless steels, were shown. The paper was illustrated by lantern slides.

* * *

Chemical Engineers to Meet

The American Institute of Chemical Engineers will hold its summer meeting at Niagara Falls, June 19-22, according to the announcement by J. C. Olsen, secretary Polytechnic institute, Brooklyn. Headquarters for the convention will be at the Clifton hotel, on the Canadian side. One day will be spent in Buffalo making inspection trips and another day will be devoted to a lake excursion to Toronto, Canada, and inspection of chemical plants in that locality. For the program of papers a symposium on acid manufacture is being arranged. This will include the manufacture and concentration of sulphuric, nitric, hydrochloric and phosphoric acids and papers along this line are solicited. The institute also is desirous of obtaining papers on other phases of chemical engineering.

Convention Calendar

Feb. 27-March 3—American Ceramic society, will hold twenty-fourth annual convention at St. Louis. Ross C. Purdy, Ceramics building, Ohio State university, Columbus, O., is secretary.

March 3—American Society for Steel Treating, sectional meeting, McAlpin hotel, New York. W. H. Eisenman, 4600 Prospect avenue, Cleveland, is secretary.

April 4-7—American Chemical society, spring meeting, Birmingham, Ala.

April 17-20—National Metal Trades association, annual convention at the Astor hotel, New York. Louis D. Fischer, Peoples Gas building, Chicago, is secretary.

April 24-26—American Supply and Machinery Manufacturers' association joint meeting with the Southern Supply and Machinery Dealers' association at the Tutweiler hotel, Birmingham, Ala. F. D. Mitchell, 4106 Woolworth building, New York, is secretary of the first mentioned society.

April 27-29—American Electrochemical society spring meeting in Baltimore.

May 4-5—Iron and Steel institute, annual spring meeting at the Institution of Civil Engineer's building, London. George C. Lloyd, 28 Victoria street, London, S. W. 1, is secretary.

May 8-11—American Society of Mechanical Engineers, spring meeting at Atlanta, Ga. Calvin W. Rice, 29 West Thirty-ninth street, New York, is secretary.

May 15-20—National Association of Purchasing Agents, seventh annual convention, also exposition at Exposition park, Rochester, N. Y. H. R. Heydon, 19 Park place, New York, is secretary.

June 5-9—American Foundrymen's association annual convention and exhibition at Exposition park, Rochester, N. Y. C. E. Hoyt, Marquette building, 140 South Dearborn street, Chicago, is secretary.

June 26-July 1—American Society for Testing Materials, twenty-fifth annual meeting, Chalfonte-Haddon Hall hotel, Atlantic City, N. J. C. L. Warwick, 1315 Spruce street, Philadelphia, is secretary.

Sept. 11-15—Association of Iron and Steel Electrical Engineers, 1922 convention at the new auditorium, Cleveland. John F. Kelly, Empire building, Pittsburgh, is secretary.

Discuss Making of Fine Steels

Metallurgists Compare Methods at Steel Sessions of Annual Meeting of American Institute of Mining and Metallurgical Engineers—Retiring President Predicts World Association of Engineers—Elect Officers

THE interest in iron, steel and metals developments which sometime ago impelled the American Institute of Mining and Metallurgical Engineers to change its name to the present style, was fully reflected at the annual convention of this organization held in New York, Feb. 20-23, inclusive. Several hundred metallurgists, including many of the country's most important figures in this general field, were on hand. In addition to the sessions of the iron and steel section, and of the Institute of Metals division, and a large number of papers on purely mining subjects, symposiums on foreign oil possibilities, and on petroleum and gas, were prominent.

As usual, the annual dinner was a brilliant affair. In the address of the retiring president, Edwin T. Ludlow, stated that the federation of British engineers into one cohesive group similar to the American Engineering council of the Federated American Engineering societies is being accomplished in England as a result of the visit to Europe last summer of the mission of 13 American engineers who bestowed the John Fritz gold medal on Sir Robert Hadfield of London and Eugene Schneider of Paris. Mr. Ludlow said the world war brought engineers together as a distinct and powerful class and their collective work was recognized by all the nations as a great force for good.

"We must not return to the prewar policy of individualism and specialization," said Mr. Ludlow, "but unite our forces into a compact body which will have the same power for solving post war problems. The whole country was delighted with the slogan 'More business in government and less government in business,' but this slogan has been carried out in only one department of the government and this department is the one that was placed in the hands of an engineer. In the future, instead of political statesmen taking over more and more the functions of business and professional leadership, we should see business statesmen, educational statesmen, medical statesmen and engineering statesmen in charge of the government departments where their professional ability is required. The engineers have been neglected in the organization of our government. Although George Washington was an engineer, no engineer since his time has ever been appointed to a cabinet position until the appointment of Mr. Hoover. The work he has accomplished and the position he has made for himself, should show the whole country that engineers and not politicians are the men needed at the head of the great government departments. To accomplish this, the engineers of the country must become unified in one central organization."

Metallurgists Compare Steelmaking Practice

UNDOUBTEDLY the most complete and thorough treatise ever prepared on the acid open-hearth process for the manufacture of gun steel and fine steels was read by W. P. Barba at the steel session, Wednesday. The paper, written jointly by Mr. Barba and Henry M. Howe, originally constituted the report of the wartime steel ingot committee and its publication for various causes had been delayed until this time. The paper detailed the various features of the best American practice for producing fine steel in the open-hearth furnace. It contrasted our method of refining hot and pouring cool, of using 40 parts of pig iron to 60 of scrap and of adding iron ore to the bath, with the practice in some European countries to pour hot, to use a very small percentage of pig iron, or none at all, and to use no iron ore. Mr. Barba deprecated statements that European steel is superior to the American product. He declared American steelmakers can produce fully as good steel as ever was made abroad, and he emphasized the need for educating the American consumer to the fact that he can buy steel from American producers that will answer his purposes. A consumer can obtain a cheap steel which is good enough for his purposes, or he can obtain a higher-priced steel, clean both from the mechanical and chemical standpoints, which is equal to the best steel made abroad.

Discusses British Practice

It was at this point that one of the most interesting developments of the meeting took place. This was the unexpected appearance of Harry Brearley, well known British metallurgist. Mr. Brearley went into a thorough discussion of several matters which had been touched on by Mr. Barba, and his remarks aroused much enthusiasm on the part of his hearers, especially because of the intimation by the chairman, Bradley Stoughton, to the effect that those who had collaborated in preparing the paper were unable, in the interest of companies they were connected with, to discuss all points freely. Mr. Brearley said he agreed with a statement by Mr. Barba to the effect that American metallurgists could make as good steel as is made anywhere in the world, but he said that in order to do so, American metallurgists must observe the proper precautions and he said this is difficult to do in a race for tonnage. Mr. Brearley's principal interest was in explaining the formation of the outer surface of the ingot when it is poured. When the ingot is bottom-poured, he said, it is formed by the ingot mold. When it is top-poured, the commotion created by the continual falling of new metal, stirs up the steel already poured into the mold, and this washes up the sides of the mold and crystallizes. This swirl-envelop, as he terms it, constantly precedes the ingot until the pouring is completed and it is this envelop which forms the surface of the ingot. He then explained the physical effects of the formation of the swirl-envelop. In order to produce fine steel, said Mr. Brearley, the ingot should be poured at a temperature at which the top surface of the ingot will begin to freeze over as it is poured into the mold. He emphasized the necessity for avoiding inclusions and said it is the custom of his company, the Brown Bayley Steel Works, to go over each mold with a powerful vacuum cleaner prior to pouring. His company,

he said, employs the bottom-pour method. The cleanness of the steel, said Mr. Brearley, can be measured by a comparison of notch bar tests of test bars cut longitudinally and transversely with reference to the direction of rolling. Where fine steel is wanted, for ball bearing races, for instance, the transverse figure should not be less than one-half of the longitudinal. Mr. Brearley said it is incorrect to say that nickel steel possesses more viscosity than ordinary carbon steel. From this standpoint, they both are the same in the bath. It is because nickel steel is tougher and harder to roll that this steel, when broken, shows the effects of impurities to a larger extent than plain carbon steel.

Effects of Sulphur and Oxides

Another paper devoted to the problems involved in the manufacture of fine gun steel was read by William J. Priestley. Mr. Priestley's paper recounted the effects of phosphorus, sulphur and oxides in ordnance steel and it discussed particularly the characteristics of the electric furnace and open-hearth steel.

A statement by Mr. Priestley that conditions that bring about the elimination of sulphur from steel guarantee that oxides and other nonmetallic impurities have also been eliminated was a matter of some misinterpretation. Mr. Priestley explained that the statement did no necessarily mean hat the presence of sulphur itself, up to a certain amount, was a detriment, but that where there was sulphur there were usually impurities. Mr. Priestley displayed samples and photomicrograph of fractured American and German armor plate rivets. This later developed a discussion of armor plate, although Mr. Priestley claimed that he had merely planned to confine his remarks to gun forgings.

The presence of excess dissolved oxides in steel as made in the melting furnace, affects permanently the results obtained in carburizing and hardening, was developed in a paper by H. W. McQuaid and E. W. Ehn. It is possible, according to this paper, that the presence of dissolved oxide can result in total unfitness of low carbon steel for case hardening purposes. Statements which the authors made to the effect that work which resisted all attempts to harden was confined to open-hearth steel, whereas electric furnace steel showed uniformly good results, led to a remark by W. P. Barba, in the discussion following the paper, that just as good steel can be produced in the open hearth as in the electric furnace if the proper precautions are observed.

Results of a series of experiments dealing with the heat treatment and microstructure of commercial white cast iron and its derivative malleable iron, were contained in a paper by Arthur Phillips and E. S. Davenport. This paper set forth data on the thermal critical points of white cast iron, changes produced in tensile properties and microstructure of white cast iron by annealing at different temperatures, the relation of the wall section of hard iron to the microstructure and tensile properties of malleable iron obtained under normal annealing conditions, and it contained notes on the mechanics of graphitization of normal white cast iron.

The effect of time in reheating quenched medium-carbon steel below the critical range was presented in a paper by Carle R. Hayward, Daniel M. MacNeil and Raymond L. Presbrey. This paper was supplementary to one presented before the institute in 1916. The authors said that even a 5-minute heating of the quenched steel at 300 degrees Cent. lowers considerably the strength and hardness and increases the ductility. There is a marked increase in ductility in passing from the 400 to the 500-degree treatment without an equivalent lowering of strength; it is accompanied, however, by a change from an indefinite to a definite yield point. The specimens reheated to 600 degrees are nearly as ductile as the annealed specimens but they have an elastic limit about 60 per cent greater. It was found that reheating the steel for one hour is all that is necessary, and it was indicated that for temperatures of 400 degress and below, one-half hour is sufficient.

The effects of carbon, phosphorus and manganese on the mechanical properties of steel were the subject of a paper by William R. Webster, which was in the form of a contribution in the proposed new discussion on the physics of steel. In this connection the care with which the steel was produced in the furnace and the care exercised in rolling have an important bearing. For instance, a poorly made, dirty steel requires considerably more carbon to give the same ultimate strength than a well-made, clean steel with the same phosphorus and manganese content. Too, in rolling, it is essential to avoid too heavy reductions and to finish rolling at the proper temperature. Mr. Webster's paper included tables showing the physical properties of steel in accordance with variations of the content of carbon, phosphorus and manganese.

In discussing this paper it was brought out that all the microscope shows in steel is not thoroughly understood, and it was thought that further study of the microstructure of steel will serve to clear up many matters that now are a mystery. Dr. Burgess, as an instance in point, told of the studies now being conducted to determine the facts with respect to gas contained in steel and the effects thereof. David R. Kellogg submitted a paper explaining how the Westinghouse Electric & Mfg. Co. has successfully built up worn and undersized parts by means of the electrolytic deposition of iron. He described the method which is used in obtaining electrolytic coatings which withstand bending and cannot be chipped off even when attached at the junction of the coating and the parent metal with a cold chisel.

New Officers

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William Kelley, Vulcan, Mich.

Metals Index Is Lower

Washington, Feb. 28.—On the basis of 1913 equaling 100, the Feb. 1 index number of the bureau of labor statistics for metals and metal products was 117. This compares with 19 for Jan. 1 and 152 for Feb. 1, 1921. The figures show the Feb. 1922 index number for all commodities was 148, against 149 for Jan. 1 and 177 for Feb. 1, 1921. The Feb. 1 index number was lower for all commodities except farm products than that of Jan. 1.

German Coke Output Up

Washington, Feb. 28.—Cable advices to the department of commerce from Commercial Attache Herring at Berlin give the following maximum prices fixed by the Iron Trade association and the Steel association on Feb. 1: Hematite, 3879 marks per metric ton; pig iron, 3447; ingots, 4210; blooms, 4550; bar iron, 4780; billets, 4680; shapes, 5440; merchant bars, 5550; hoop iron, 6630; wire rods, 6000; thin sheets, 7440; medium sheets, 7100; heavy sheets, 6220; 80 per cent ferromanganese, 12,030. Coke production in Germany in the first 19 working days of January was 1,496,236 tons, compared with 1,465,377 tons in the first 20 working days of December. A general feeling of insecurity and suspense pervades all German industry, according to Attache Herring.

Rail Pool Awaits French Action

Parleys Not To Be Held Until Problems Such as Allocation of Tonnage and Operating Spheres Are Settled—Will Invite United States To Join Syndicate —Must Buy Steel Company Stock

European Staff Correspondence

European Headquarters,
THE IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

LONDON, Feb. 20.—Plans which have been going forward in Europe for some time looking to a rehabilitation of the prewar international rail syndicate or pool, are now waiting on further developments in France and Belgium. A meeting of representatives of the principal Belgian and French steel producers was held recently followed by a meeting in Paris of the French, Belgian, Luxemburg and British interests represented at the original conference in London.

At the Paris meeting, the suggestion was advanced that the French, Belgian and British mills should first reach an agreement as to details, such as allocation of tonnage, foreign spheres of operation, etc., on the basis of which the rail syndicate might be revived. It was then proposed that terms should be drafted under which other rail producers, referring principally to Germany, but also to the United States, might become members.

This proposed procedure is believed to represent substantially the ideas of the British rail manufacturers as to the policy which should be followed. The view is held in Great Britain that the rail syndicate cannot be revived effectively unless all the principal producers throughout the world are members. At the same time it is felt that if substantial agreement is first reached between the leading interests west of the Rhine, the German mills would be brought in on acceptable terms.

Contrary to some reports from Paris, the chief obstacle to further progress does not seem to be due to Franco-Belgian reluctance to admit German mills, under suitable conditions, but to the fact that neither the French or Belgian steel manufacturers are as yet in a position to deal authoritatively with the representatives of mills in outside countries. Important producers in both countries still stand outside the proposed arrangements. This problem is being dealt with in both countries through efforts now being made to reorganize and strengthen the Comptoir Siderurgique in France and the Comptoir des Acieries in Belgium. Whether the Luxemburg producers will come into the latter organization depends on the final disposition of the reciprocity agreement which has been negotiated between Luxemburg and Belgium.

Until these various domestic arrangements are more or less completed it is doubtful if another general conference will be held, or whether a formal invitation will be extended to the principal American rail exporters. If the proposed syndicate is to function satisfactorily American and eventually German mills must be included, according to opinions of those concerned.

Disclose English Trade Association Methods

London, Feb. 18.—Recently an investigation of the National Light Castings association, an organization controlling the builders hardware, stove and plumbing supply castings trade in the United Kingdom was ordered by the parliamentary committee on investigation and trusts. This committee now has reported and its finding are embodied in the following summary:

1.—In the light castings industry there is a trade combination, the National Light Castings association, which covers 95 per cent of the British output of light castings; and among distributors of light castings there is a trade combination, the Builders' Merchants central committee, which represents almost the entire distributing trade.

2.—The minimum prices fixed by the National Light Castings association since the armistice show a profit which is not unreasonable. The discounts allowed by the association form a fair and reasonable margin to the distributor.

3.—The price list issued by the Builders' Merchants central committee for goods sold over the counter, though showing in the case of rough goods an increase on the association standard list, represents a gross average trading margin of 21 per cent over the whole range of goods. We regard this percentage as not unreasonable for goods of this nature sold from stock.

5.—The National Light Castings association has during the last two years engaged in certain activities designed to raise the level of efficiency and lower the costs of production throughout the industry. In our view these activities do not at present adequately balance the restrictive influence of the association, and there is no guarantee that the results of improved efficiency would reach the public in the shape of lower prices.

3.—The National Light Castings association fixes the prices below which the light castings manufactured by its members shall not be sold in this country; and the Builders' Merchants' Central committee issued to the great majority of builders' merchants instructions as to the minimum prices at which light castings shall be sold over the counter from stock. By a pooling arrangement the National Light Castings association penalizes any member who reduces his output relative to the rest. We regard this arrangement as tending to restrict total output, to stereotype the layout of the industry and to retard the improvement of efficiency. We consider it to be contrary to the public interest. By a system of deferred rebates, conditional upon exclusive dealing and strict conformity to the price list, the National Light Castings association binds to itself almost the whole of the distributing trade, reinforces its control over prices, and makes it difficult for any existing or would-be competitor outside the association to market his goods. We are of opinion that the giving of deferred rebates on condition of price maintenance and exclusive dealing should cease.

6.—The present output of light castings is at the rate of about 250,000 tons per annum, which would seem to be sufficient for rather less than 4000 houses per month. In proportion as that rate of house completion is exceeded the output of light castings will need to be increased and more skilled molders will be required. Insofar as the association is promoting the introduction of improved methods and equipment it is assisting output; but the effect of its pooling arrangement is to restrict output.

British Court Says Steel Agreement Is Valid

London, Feb. 20.—Judgment has been entered against Sperling & Co., bankers, London, in connection with their agreement in 1920 to purchase the controlling interest in Baldwins' Ltd., one of the largest British steel producers. Sperling & Co. failed to carry out their contract on the ground that they were merely agents for The Northumberland Shipbuilding Co., and affiliated interests, which in turn had failed to proceed with the transaction owing to unexpected taxation developments in Great Britain. The court has held that there was nothing in the written or verbal contract to indicate that Sperling & Co. were not acting on their own behalf and should therefore be responsible for the contract. This contract involved an agreement to purchase about 300,000 shares of Baldwins common stock with a par value of £1, at a price of £3 per share.

Chicago Building Unions Divided

Refusal of Ten Trade Organizations To Abide by Landis Award Results in Establishment of Open Shop—Twenty-two Others, Accepting, Retain Closed-Shop Conditions—Industry Freed of Leaders' Strong-arm Methods

BY GEORGE H. MANLOVE

CHICAGO, Feb. 28.—After years of ruthless pillage, the building industry of Chicago has been delivered from the domination of strong-arm rule and undivided graft.

Twenty-two building trades unions the leaders of which saw the drift of events and accepted the mediation of Federal Judge Landis now retain closed shops under the Landis award, while 10 dominated by the "old guard" are outlawed and the trades are under the open shop. A remarkable reversal of attitude has taken place in the 10 outlawed unions and they are seeking to make peace and avert disaster.

For many years the building situation in Chicago has been growing increasingly difficult and conditions during the war brought it to a climax. Business agents and other officials of the unions apparently became obsessed with power and went to extremes in levying graft tribute on practically all builders in Chicago. Every device to a limit production was put in effect and alliances were made with Chicago material dealers to exclude material manufactured in other cities. The business agent collected tribute to allow the installation of the "unfair" material, even when it was not in competition with anything manufactured in Chicago or when it was made under union rules elsewhere. These practices, combined with high wages, caused the stoppage of new construction. Builders sought some relief by lower wage rates, and were met by an absolute refusal to recede from the almost uniform level of $1.25 per hour and many burdensome working rules.

This was the situation about 10 months ago when Judge Landis was prevailed on to serve as arbitrator, the employes to remain at work at the prevailing scale until an award was rendered. After several months of carefuly consideration he handed down a decision in which wages for the several crafts were set at figures somewhat under $1.25 per hour, based on the relative value of the several crafts.

Immediately the carpenters and several other crafts refused to abide by the decision. Some contractors, lacking courage to continue opposition, began hiring members of these trades at the old rate of $1.25 per hour, but building continued to lag.

After Judge Landis had held further conferences with the leaders in an effort to bring all the unions into accord, the Chicago Association of Commerce became sponsor for a movement to establish the open shop in the building trades. A citizens' committee was formed which undertook to smooth out the matter but it was found that while 22 unions could be brought into line, 10 remainded outside and would not accede to the Landis award. These 10 unions include plumbers, gas fitters, lathers, slate and tile roofers. All refused to abide by the results of the arbitration, although previously they had agreed to do so. Sheet metal workers and fixture hangers withdrew from the arbitration proceedings before the award was made. The carpenters union stood firm from the beginning and refused to enter the arbitration or to abide by the recommendation of Judge Landis.

Judge Landis Principles

Ten principles were specified in the award, intended to remove the possibilities of graft and oppression on the part of business agents. The principles are:

Peaceful adjustment of disputes; no stoppage of work either individually or collectively.

Nonunion men may work with union men, in the case of scarcity of help, until such time as union men may be obtained.

Any journeymen may use in his work the tools of any other trade.

Small tasks of 30 minutes duration in any one day to be assigned to any trade at the discretion of the employer.

First 2½ hours overtime at 1½ times the regular wage, beyond this, Saturday afternoon, Sunday and holidays, double may be performed by any other trade the regular rate.

Shift work will be paid at the regular rate.

No restriction of output, no restriction as to the use of machines, methods or appliances, no restriction against any raw material or manufactured material except prison made.

Employers may employ or discharge whomsoever of the union they please and employes may work for whomsoever they see fit.

The foreman is to be exclusively the agent of the owner.

Nothing shall prohibit an employer or one member of the firm from working on his job.

As soon as it became apparent that certain unions would not abide by Judge Landis' award the citizens' committee proceeded to bring in outside workers and provide contractors with sufficient men for their needs. They also notified members of the carpenters and other rebellious organizations to seek employment at the Landis wage and as a result contractors now are able to get as many men as they need for the present volume of work. It is claimed that 75 per cent of all building operations in Cook county are now under the terms and wages of the Landis award. Some contractors, possibly through fear, continue to employ workers at the higher wage scale. An effort is being made now to have these contractors join with the majority and sign up with the citizens' committee.

Every effort is being made to guard against damage by the outlaw unions, both by the use of watchmen and by insurance. No disorder has resulted.

An interesting feature of the latter days of the struggle has been the changed attitude of leaders of the carpenters' and other unions. At first a proposition was made to accept the Landis award provided the nonunion men were discharged. No negotiation was entered into by the citizens' committee, which had cut off all communication with these unions, and the latter then announced they would accept the Landis award and go to work with the nonunion men, letting the future determine the sincerity of their intentions, trusting to public opinion to eliminate the nonunion workers later. The only answer to this was announcement by the the citizens' committee that the books were open for union as well as nonunion men to come to work on equal terms at the Landis scale.

The effort of leaders to regain some of the public support they had lost is unique in the Chicago building trades and failure to get back into negotiation has cost several labor leaders their positions. The leadership of the Chicago Building Trades council has changed several times in the past few weeks and there apparently is turmoil in the ranks and lack of confidence in the leaders.

The author is associate editor of THE IRON TRADE REVIEW at Chicago.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

COL. ARTHUR S. DWIGHT, New York, the new president of the American Institute of Mining and Metallurgical Engineers, is a leading figure in the Federated American Engineering societies. He is a graduate of the Columbia school of mines, where he obtained his degree in 1885. Col. Dwight has been active in the Anglo-American movement to promote world peace through the co-operation of engineers throughout all countries. He is a former trustee of Columbia university and is secretary of the general committee of trustees, faculty and alumni of the Columbia school of mines. Col. Dwight was a member of the American mission which went abroad last summer to confer the John Fritz gold medal upon Sir Robert Hadfield in England and Eugene Schneider in France.

Charles F. Smith has resigned as chairman of the board of directors of the New Britain Machine Co., New Britain, Conn.

J. Fred Havey, foreign sales agent of the Saco-Lowell Shops, Boston, is spending a month's vacation in the West Indies.

Charles F. Smith has resigned as chairman of the board of directors of the New Britain Machine Co., New Britain, Conn.

J. H. Strawn has been elected secretary and treasurer of the Washington Coal & Coke Co., Dawson, Pa., to succeed the late J. H. Price.

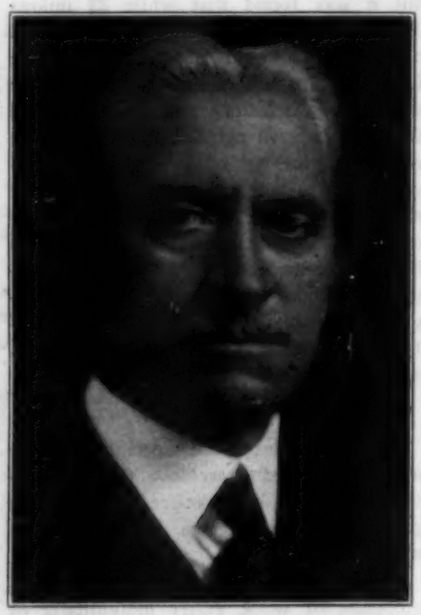
R. L. White has been appointed Detroit district manager, with offices at 809 Kresge building, Detroit, for the Wilson Welder & Metals Co., Inc., 132 King street, New York.

Frank H. Page, president of the National Equipment Co., and treasurer of the Van Norman Machine Tool Co., both of Springfield, Mass., has been elected president of the Springfield Realty Co., a new company.

C. Rogers has been made night superintendent for the Monroe Steel Casting Co., Monroe, Mich. Mr. Rogers formerly was superintendent of the Michigan Gray Iron Casting Co., Detroit.

J. Harvey Williams, president of J. H. Williams & Co., Brooklyn, manufacturers of drop forging and drop forged tools, has been elected president of the American Drop Forging institute and re-elected president of the Brooklyn chamber of commerce.

Col. Arthur D. Butterfield, head of the educational department of the Norton Co., Worcester, Mass., has taken a position to do special work for the University of Vermont. He will continue



COL. ARTHUR S. DWIGHT

to act in an advisory capacity at the Norton Co.

Ross D. Willis, formerly sales engineer in Southern Michigan for the Lakewood Engineering Co., Cleveland, has become affiliated with William F. V. Neumann & Sons, representing in that territory the Baker R. & L. Co., Cleveland, in its line of industrial tractors, trucks and cranes.

Joseph H. Roberts has resigned as superintendent of the bar steel and special products division of the Nicetown works of the Midvale Steel & Ordnance Co., Johnstown, Pa., to become assistant to the president, L. J. Campbell, of the Electric Alloy Steel Co., Youngstown, O.

George T. Kimball, secretary of the American Hardware Corp., New Britain, Conn., has been elected vice president succeeding Charles Glover who resigned recently because of ill health. Albert N. Abbe, purchasing agent, has been made secretary and W. H. Booth succeeds Mr. Abbe.

Martin Harder, formerly superintendent the malleable department, the Chain Belt Co., Milwaukee, and more recently connected with the Saginaw Malleable Iron Co., Saginaw, Mich., has become affiliated with the South Side Malleable Castings Co., Milwaukee.

F. T. Herron, for four years associated with the Lucey Mfg. Corp., Chattanooga, Tenn., manufacturer of oil field machinery, is to return to the American Brake Shoe & Foundry Co. as manager of the Southern Foundry & Machine Co., Chattanooga, one of its subsidiaries.

Ralph M. Hamilton has resigned as sales manager of the Jefferson Gas Coal Co. to become sales manager of the coal and coke department of the Iron Trade Products Co., Pittsburgh. At one time Mr. Hamilton had been in the mining department of the Lackawanna Steel Co.

W. B. Prince, secretary and treasurer of the Cleveland Brass & Copper Mills, Inc., Cleveland, has been elected secretary and general manager and placed in charge of the company's sales. C. A. Branke, assistant treasurer, was made treasurer. H. C. Osborn and J. F. Harrison were re-elected president and vice president, respectively.

L. B. Peeples, Seattle manager for Crane & Co., Chicago, has been transferred to the company's Los Angeles office. M. Straith-Miller, manager of the waterworks department of the company, goes with Mr. Peeples to take a similar position. J. J. Doherty, assistant manager, is at present in charge of the Seattle office.

Henry Harnischfeger, president of the Pawling & Harnischfeger Co., Milwaukee, manufacturer of material handling machinery, has sailed for the Orient and Europe. He will visit the various foreign branches of the Associated Machinery Corp., an export organization of which the Milwaukee company is a member and of which Mr. Harnischfeger also is president.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

JOHN McCONNELL has again become affiliated with the United Alloy Steel Corp., Canton, O., as vice president in charge of operations. He gained distinction in the early days of the United Steel Co., later merged in the United Alloy Steel Corp., in producing the first vanadium steel in commercial quantities. His experience comprises 10 years with the Carnegie Steel Co., three years with the Bethlehem Steel Co., 11 years with the United Steel Co. when he was general superintendent, one year with the Central Steel Co., as consulting metallurgist, and three years as vice president in charge of alloy steel production with the Interstate Iron & Steel Co., Chicago.

Frank W. Fenno has been appointed trustee in bankruptcy for the Gardner Brass Works, Gardner, Mass.

W. E. Cole has resigned as superintendent of the Parker Wire Goods Co., Worcester, Mass.

Joseph Talamo has been named trustee of the bankrupt estate of the Standard Specialty Co., Worcester, Mass., maker of hardware.

Martin E. Kern, now in Europe, has resigned as a director of the American Bosch Magneto Corp., Springfield, Mass.

George W. Bender, who has been with Mudge & Co., has been made vice president of the Argyle Railway Supply Co., Chicago, and has opened an office at 327 South La Salle street, Chicago.

Joseph J. Musante has been elected president and treasurer, and Clifford J. Lewis secretary of the Fabric Machine Co., Bridgeport, Conn., which was recently incorporated with $50,000 capital.

Comly B. Shoemaker, president and general manager of the Glasgow Iron Co., Pottstown, Pa., has been appointed a member of the agricultural committee of the Philadelphia chamber of commerce.

Arthur E. Hodgson, assistant treasurer of the Winchester Co., the holding company of the Winchester Repeating Arms Co., both of New Haven, Conn., has been elected a director of both corporations, succeeding A. W. Hooper, resigned, in the latter. The Arms company also increased its directorate by the election of John R. Hagar, a director of the Winchester Co.

Alexander C. Brown, president of the Brown Hoisting Machinery Co., Cleveland, and also of the Cleveland chamber of commerce, is reported improved following an operation which he recently underwent at Lakeside hospital in that city.

C. D. Watson, formerly vice president of the Sheet Metal Mfg. Co., Youngstown, O., has opened an office at 407 Mahoning Bank building, Youngstown, O. where he will handle sheets and sheet mill by-products under the name of the Watson Bros. Steel Co.

V. A. Hain, formerly with the General Electric Co., has been made manager of offices opened at 20 East Jackson boulevard, Chicago, by the George J. Hagan Co., Pittsburgh, furnace and combustion engineer. J. Sandberg, also formerly with the General Electric Co., has been placed in charge of offices opened at 515 Murphy building, Detroit, by the Hagan company.

Neil W. Eyer, sales representative in Dayton, O., for the Betz-Pierce Co., Cleveland, jobber of iron and steel, has been appointed district sales manager for the company in southern Ohio. Mr. Eyer is the oldest representative, in point of service, in the company's sales department. Frank E. Gaines has been made sales representative with headquarters at 621 North Noble street, Indianapolis.

C. D. Sargent recently joined the sales force of the Abrasive Co., Philadelphia, manufacturer of artificial abrasives and grinding wheels. Mr. Sargent's headquarters are at the Abrasive Co.'s Chicago store, 566 West Washington boulevard. His territory includes part of Chicago and northern Indiana. He resigned from the Carborundun Co. about two years ago to devote himself to automotive engineering problems.

William T. McKelvey has been named acting district sales manager for the Lackawanna Steel Co. at Philadelphia, vice Huntington Downer, resigned. Mr. McKelvey was formerly assistant to William T. Breeden for two years, when the general sales manager of the Lackawanna Steel Co. was Philadelphia district sales manager. Mr. McKelvey continued as assistant to Mr. Downer. Prior to his Lackawanna connection, he was with the Midvale Steel & Ordnance Co. and with the Baldwin Locomotive Works.

Fred J. Waldo, the senior partner of the new firm of Waldo, Egbert & McClain Inc., which will conduct a brokerage and agency business at 744-746 Marine Trust building, Buffalo, is a man of long experience in pig iron selling. He was formerly connected with the Rogers-Brown Iron Co. being associated with that company for almost 20 years. Justus Egbert, another member of the firm, left the position of director of purchasing at the American Radiator Co. to go with the new company. He was for some years identified with the American Radiator Co.'s plants in England and France. William J. McClain began his career in the plant of the United States Steel Corp., at Youngstown, O., going then to the Republic Iron & Steel Co. with which he spent 11 years, both in the operating and sales end. His last position with Republic was as Buffalo district sales manager.

Arthur Whitcraft has taken charge of the manganese steel sales department of the Hadfield-Penfield Steel Co., Bucyrus, O. Mr. Whitcraft was for a number of years successively with the Marion Steam Shovel Co. the American Locomotive Co. and the New York Central railroad. For 12 years he was with the American Manganese Steel Co. as a sales engineer engaged in the design, application and sale of manganese steel castings. During the war period he was captain in the ordnance department and was engaged in the work of mounting 12 and 14-inch naval guns on railway cars.

D. W. Coe, formerly of the East Boston, Mass., office of the Mead-Morrison Mfg. Co., has been placed in charge of the company's Canadian subsidiary, the Canadian Mead-Morrison Co., Ltd. John R. Story is chief engineer, his position at East Boston being taken by F. O. Snow.

Steel Reports Reflect Slump

Annual Statement of the Republic Iron & Steel Co., Shows Large 1920 Earnings Are Turned Into Heavy Deficit in 1921—Worst Year in History—Company Passes Preferred Dividend—Lackawanna Steel Loss Also Large

THE worst year in the company's history, is the way the annual report of the Republic Iron & Steel Co., characterizes 1921. Total earnings of the company for the year were $685,010, from which there was deducted for depreciation, inventory losses and other items, $6,350,252. As a result the net loss was $5,665,242.

"Present low prices for iron and steel would seem to suggest that the period of liquidation and readjustment is about over", says the report. "Normal conditions in iron and steel are not expected, however, until freight rates and wages in the coal mining and building trades have been lowered. In these industries war schedules are still maintained regardless of reduced living costs and reductions in labor costs of most other fields of activities. Stocks of iron and steel are well liquidated, and demand is slowly improving, but operations at present are far from normal.

"While we expect gradual improvement in the volume of business with the opening of spring trade, yet the outlook for the immediate future is not encouraging. The balance of orders for finished and semifinished materials on the company's books as of Dec. 31 totaled 67,731 tons against 162,906 tons one year before and 389,524 tons two years before. Unfilled orders for pig iron were 23,839 tons against 35,772 tons, one year preceding and 96,855 tons as of Dec. 31, 1919.

"General conditions affecting operating results can best be summarized by the statement that the tonnage shipped during 1921 decreased 68 per cent while selling prices for iron and steel, declined 50 per cent from the high point of 1920. Our total tonnage was adversely affected by the unprecedented depression in the agricultural implement trade, and by subnormal demand from the railroads and other constructive enterprises using such heavy iron and steel products as bars, plates and shapes, which products represent about one-half of our total output. In other departments of our business, such as sheets and tubular products, the demand was relatively better. As a result of this unbalanced condition of trade, our total production and shipments for the year were only approximately 25 per cent of our normal capacity."

As a result of the present business situation the board of directors have decided to suspend dividend payments on the preferred stock of the company. A statment accompanying this decision said that "as current operations are without profit, and the future outlook for business uncertain, it was the opinion of the board that this action is to the interest of the stockholders". A comparative income statement follows:

	1920	1921
Net earnings	$13,825,521	*$511,528
Other income	348,642	173,482
Gross income	14,174,163	685,010
Less idle plant expense	.....	1,494,130
Balance	.....	809,120
Depreciation	1,506,260	1,026,874
Exhaustion of minerals	508,062	159,796
Interest	737,967	806,974
Inventory reduction	1,992,516	2,478,918
Loss on Liberty bonds	.....	383,558
Loss for 1921	.....	5,665,242
Surplus Dec. 31, 1920	.....	37,441,571
Balance	.....	31,776,329
Preferred dividends	1,750,000	1,750,000
Common dividends	1,800,000	450,000
	3,550,000	2,200,000
Net surplus	37,441,571	29,576,329

*Net earnings from operations after deducting $1,800,360 for maintenance and repairs.

The comparative statement of net working assets shows a total of $15,180,064 as of Dec. 31, 1921, against $25,593,877 one year before and $23,610,604 two years preceding. Two years ago the company held government certificates and bonds to the amount of $8,023,149. This item was reduced to $5,174,411 at the close of 1920 and in the latest statement it has disappeared entirely. The amount of cash, $1,292,436, while somewhat smaller than Dec. 31, 1920, is larger than two years before.

The inventory of $15,231,804 compares with $18,751,278 one year ago. It is abnormally large, the report says, because of excess stocks of ore, and increased stocks of sheet steel and tubular goods.

Pig iron production in 1921 totaled 301,080 tons against 972,188 in 1920 and 791,597 in 1919. The output of Lessemer and open-hearth ingots amounted to 329,778 last year, compared with 984,953 in 1920 and 752,417 two years before. The following table shows the comparative record of shipments by products:

	1921	1920	1919
Finished products	203,374	708,889	473,005
Semifinished products	84,272	194,492	154,053
Pig iron	88,986	182,326	170,537
Total	376,632	1,085,707	797,595

The average number of men employed by the company in 1921 was 5623 against 13,230 in 1920 and 11,784 in 1919. The total wages paid and the average annually per man is shown in the following table:

Year ending	Amount	Average per man
Dec. 31, 1921	$ 9,638,950.77	$1714
Dec. 31, 1920	28,972,720.15	2190
Dec. 31, 1919	21,466,605.56	1822
Dec. 31, 1918	23,747,260.97	1619
Dec. 31, 1917	17,574,480.56	1211
Dec. 31, 1916	12,778,836.21	979
Dec. 31, 1915	8,558,574.01	771

Lackawanna Steel Co. Loss in 1921 Is $3,384,876

Total losses aggregating $3,384,876 in 1921 are reported by the Lackawanna Steel Co., in its annual report. Adverse operating conditions, inventory revaluation and tax deductions combined to cause the deficit.

The loss from operations, after taxes and maintenance deductions, amounted to $1,082,276. In the preceding year the company earned a profit of $10,674,345 and had a surplus of $4,294,375 after all deductions had been made. Deductions aggregating $887,962 were made last year on Lackawanna Steel bonds. Deductions of $147,916 on bonds of subsidiary companies were also made. Depreciation charges and accruing renewals absorbed $1,378,176, while the reserve for extinguishment of mines and mining investments was $151,557. The depreciation charge was $749,244 less than in 1920.

The comparative income account for the last two years follows:

	1921	1920
Net earnings	*$1,082,276	$10,674,345
Interest	1,035,879	1,122,219
Balance	*2,118,155	9,552,125
Extinguishment of mines and investments	151,557	300,008
Depreciation and renewals	1,378,176	2,127,421
Balance of profit	3,647,889	7,124,696
Adjustment for taxes, etc.	263,012	*2,830,321
Net profit and loss	*$3,384,876	$4,294,375

*Deficit.

National Enameling Names Six New Directors

As the result of a contest between the management of the National Enameling & Stamping Co. and a group of stockholders at the annual meeting of the company, six new directors and

10 old directors in opposition to the management's ticket were elected by a vote of 130,512 to 77,719. The successful stockholders' faction was led by Clement Studebaker and the six new directors elected are: Clement Studebaker, J. W. Dougherty, former president of the Crucible Steel Company of America; W. J. Maguire, J. S. Moran, Fred Orthwein, associated with the Busch interests of St. Louis, and W. B. Randolph.

The following were re-elected, having received all the votes of the opposition; L. C. Bartling, G. V. Hagerty, G. W. Knapp, A. W. Niedringhaus, G. W. Niedringhaus, E. H. Schwartzburg, A. J. Kieckhefer, L. I. Niedringhaus, G. H. Niedringhaus and W. Howard Matthai. The directors who were defeated for re-election included H. W. Bartling, George W. Kapp Jr., Charles L. Wagandt, Solomon Richman, Robert D. Samuels. The board re-elected G. W. Niedringhaus president. The common dividend has been passed, but the preferred has been declared.

Mr. Studebaker said after the meeting the election of his ticket did not indicate that there was any dissatisfaction with the present management. "It means that we are going to advocate a more active policy and develop to a greater degree the steel end of the business."

The report of earnings for 1921, made public at the annual meeting showed an operating loss of $218,510, against a net profit of $5,183,927 in 1920. After depreciation, interest and other charges, there was a deficit of $1,258,615, against a surplus of $3,362,151; after payment of common and preferred dividends, the total deficit last year amounted to $2,894,123, against a surplus of $1,726,643 in 1920. The income account for the year follows:

	1921	1920
Operating loss	*$218,510	†$5,183,927
Depreciation, etc.	766,895	954,424
Bond interest	87,710	90,352
Reserve for federal taxes	.....	600,000
Sinking fund	185,500	177,000
Deficit	1,258,615	‡3,362,151
Preferred dividends	700,000	700,000
Common dividends	935,508	935,508
Year's deficit	2,894,123	‡1,726,643

*After crediting other income. †Profit. ‡Surplus.

Rolls Company Reports

Net profits of the Pittsburgh Rolls Corp., for the year ended Dec. 31, 1921, totaled $140,061 against $227,885 in the preceding year. After setting aside $77,335 for retirement of first mortgage bonds, the sum of $62,725 was available for dividends and other purposes. This compared with $108,572 available for dividends in 1920. The company has increased its cash position. The total of cash listed in current assets at the close of 1920 was $69,731. At the close of 1921 it was $201,421. Inventories were reduced from $383,614 in 1920 to $271,526 in 1921. The company's surplus account increased to $219,924.

Cite Assessments on Oil To Uphold Ore Tax

Duluth, Minn. Feb. 27.—The state of Minnesota has filed an answer in the district court here to the suit by the Oliver Iron Mining Co. and 30 other mining companies to test the constitutionality of the occupational tax on the mining industry. The state's attorneys contend that the new tax is neither a property nor an income tax. They are ready to cite examples of taxes imposed by southern states on the oil industry to prove that the federal constitution is not violated by an occupational tax on the mining industry. It is expected that the hearing on the interlocutory injunction sought by the mining companies will not be held before April 1.

Mesabi Iron Co. Increases Capitalization

The Mesabi Iron Co. has increased its capitalization to finance the completion of its magnetic iron ore sintering plant at Babbitt, Minn., now under construction, and to provide funds for its business. The original capital of the company was $3,000,000 preferred stock and 300,000 shares of no par value. As a result of the increase, its capitalization now comprises $1,000,000 worth of bonds, $3,000,000 preferred stock and 500,000 common shares of no par value, of which 190,000 have been issued.

The plant now under construction will comprise the initial unit in what is expected to result in a gigantic sintering establishment, but the company will not make any plans for expansion until the results of the operation of the first unit have developed. The present expectations are that the first unit will be operated about April 1.

Stock Purchasing Drops

Reflection of the depression in the steel industry with reduced employment and wages is seen in the record of subscriptions by the employes of the United States Steel Corp., under the company's latest subscription plan for common stock. According to preliminary figures given out 34,432 employes took 94,285 shares at $84 a share. It is estimated that final totals will show an increase of about 5 per cent. In 1921 the company sold 255,325 shares to 81,722 employes, the price being $81 a share.

Employers Given Greater Control Over Men

An award by the board of arbitration in the controversy between the publishers of New York daily newspapers and union pressmen employed by them enunciates certain principles in employment relations which are considered highly important in a general sense. Judge Martin T. Manton of the United States court of appeals was chairman of the board. The award was made Feb. 21, and is supposed to settle a labor controversy which has existed for 12 years.

The number of men employed on each press is to be designated by the publishers, instead of the unions, as now. Men may be assigned to any work in the pressroom by the publisher instead of, as now, by the union. The publisher is to be the judge of competency and to have control of the pressroom force. The publisher also may transfer men from press to press and from one position to another.

The foregoing are the rules which may be applicable in principle to other establishments. The board also decided a number of issues with respect to wages and working-time. The day's work is to consist of eight hours, and overtime at the rate of time-and-a-half is to be paid only for time worked.

Wellman-Seaver Reports

The Wellman-Seaver-Morgan Co., Cleveland, reports that net profits for the year ended Dec. 31 were $61,518. The surplus account of $770,467 compares with $728,956 one year before, while the company is entirely free from bank indebtedness. In addition the company has cash on hand amounting to $399,773 against $269,691 one year ago. The company states that current business on the books is unsatisfactory and the first six months of 1922 promise to be unsatisfactory.

Review Rail Wages March 6

Cleveland, Feb. 28.—With 175 class 1 railroads represented by petitions for wage reductions, the United States railway wage board has closed its docket for the hearings to begin March 6. The carriers ask that the remaining 10 per cent of the 20 per cent increase granted in July, 1920, be eliminated. Thirteen labor organizations and six shop crafts ask increases of 6 to 13 cents per hour.

Strives To Place Sterling on Gold Basis

The Chancellor of the Exchequer has stated in the house of commons that it is the intention of the British government to "permit the re-establishment of an unrestricted market for gold in London at the earliest date at which the state of exchanges renders this course possible and desirable".

It is believed here that a policy of rather far reaching significance underlies this statement—a policy not unconnected with the recent heavy rise in sterling exchange in New York.

With the co-operation of the governors of the Bank of England, it now seems evident that a strong effort is being made to put sterling back on a gold basis within a measurable number of months. England's world-wide trade connections seem to justify this step, and it is also pointed out here that the re-establishment of the gold standard would virtually complete the liquidation of prices and stabilize the cost of production in Great Britain.

British financiers and treasury experts also are anxious to re-establish the gold standard in order that sterling may be more freely used on the Continent as a medium of exchange for international transactions. Continental banks of course are intimately acquainted with sterling and have close connections with London. For this reason it is pointed out that pounds are more desirable than dollars for European international currency. In fact owing to the chaotic condition of paper money in many parts of Europe at present, sterling is already being used to a large extent for international transactions. Iron ore, for instance, is almost exclusively bought and sold on a sterling basis throughout Europe, and iron and steel exports and imports are handled generally on the same basis. Sterling itself, however, has not up to the present been stabilized and cannot be definately stabilized unless it is put back on a gold basis.

The Bank of England, it is understood, is making every effort possible with all of its great resources, to re-establish the par value of the pound in New York, and practically all the gold production of the British Empire, which is considerable, is being utilized to this end. It would be rash, however, to predict the course of even sterling exchange during the next few months.

The George Marston Whitin Gymnasium, Inc., Northbridge, Mass., is to be organized under the laws of Massachusetts to erect a recreation building to cost $200,000 as a memorial to the late George Marston Whitin, for many years head of the Whitin Machine Works.

Selling Mexican Pig Iron in Southwest

Monterey, Mex., Feb. 23.—Preparations are being made by the Monterey Iron & Steel Co. to sell more pig iron in the United States. It is shipping a considerable tonnage to points in Texas, and is investigating freight rates with a view to extending its trade into New Mexico and Arizona. The company has for some time been shipping steel billets to Italy and other European countries. It has established distributing centers in all of the larger cities of Mexico.

A Japanese syndicate is reported to have purchased a large deposit of high grade iron ore, situated on the Pacific coast, in the state of Guerrero, near the port of Acapulco. The ore is situated remotely from railroad transportation facilities, but almost overhangs the deep coastal waters of the Pacific, so that it may be possible to load ships by cable from the mine.

Obituaries

John M. Coes, one of the founders of and a former treasurer of the Coes Wrench Co., Worcester, Mass., died unexpectedly at his home in that city, Feb. 18, aged 81 years. Since his retirement from the business he had been president of the Worcester Mechanics Savings bank.

Benjamin F. Brown, president of the Brown Bag Filling Machine Co., Fitchburg, Mass., died at his home in that city, Feb. 21, aged 73 years.

Arthur J. Rowland, for 25 years general superintendent of the Lamson & Goodnow Mfg. Co., Shelburne Falls, Mass., maker of cutlery, died Feb. 18, as the result of injuries sustained Feb. 1 by falling from a ladder while viewing the ruins of a fire at the plant. He was 57 years old.

Charles A. Blair, head of the accounting department and cashier at the Corbin cabinet lock division of the American Hardware Corp., New Britain, Conn., died at his home in Newington, Conn., Feb. 20, aged 78 years. He had been with the company since its organization and for many years before the merger was with the Corbin industries, a total service of 34 years.

British Pig Iron Output Gains in December

London, Feb. 20.—According to the official statistics of the National Federation of Iron and Steel Manufacturers, the production of pig iron in Great Britain in December amounted to 275,000 tons, this figure being slightly in excess of the output in November which was 271,800 tons.

The production of pig iron in Great Britain for the entire year 1921 was 2,611,400 tons, compared with 8,007,900 tons in 1920, 7,393,000 tons in 1919, 9,086,000 tons in 1918 and 10,260,000 tons in 1913, the latter being the maximum figure. British pig iron production last year was lower than for any year since 1850, when the production amounted to 2,249,000 tons.

Stacks in blast Dec. 31, were 79, compared with 85 on Nov. 30. Fifteen furnaces were blown out during December and seven blown in. Since the first of the year about five more large furnaces have been blown in so it is expected the January production of pig iron will show a further increase. Of the December, pig iron total 92,400 tons was hematite, 81,500 tons basic, 13,800 tons forge and 78,600 tons foundry grades.

The production of steel ingots and castings in December amounted to 381,000 tons, compared with 442,800 tons in November. The decrease is attributable to the Christmas holidays. The December rate was 50½ per cent of the monthly average in 1920.

The total production of ingots and castings in 1921 was 3,624,800 tons, compared with 9,056,800 tons in 1920, 7,894,000 tons in 1919, 9,539,000 tons in 1918 and 9,717,000 tons in 1917, the latter being the maximum. The following table gives the production of pig iron and steel in Great Britain for the past two years.

PIG IRON

	1921	1920
Jan.	642,100	665,000
Feb.	463,600	645,000
March	386,000	699,000
April	60,300	671,000
May	13,600	738,000
June	800	726,000
July	10,200	750,600
Aug.	94,200	752,400
Sept.	158,300	741,000
Oct.	235,500	533,200
Nov.	271,800	403,200
Dec.	275,000	682,500
Total	2,611,400	8,006,900

STEEL INGOTS AND CASTINGS

	1921	1920
Jan.	493,400	754,000
Feb.	483,500	798,000
March	359,100	840,000
April	70,600	794,000
May	5,700	846,000
June	2,700	845,000
July	117,200	789,900
Aug.	434,100	709,200
Sept.	429,300	884,700
Oct.	405,400	544,300
Nov.	442,800	505,100
Dec.	381,000	746,600
Total	3,624,800	9,056,800

Inquiries Pour in on Exporters

Merchant Demand Indicates Sales for March Will Far Exceed Those During February—Japan Still a Heavy Purchaser of American Rails—South America Is Reviving Old Projects

NEW YORK, Feb. 28.—Despite the fact that February is the shortest month, and is further shortened by special holidays in the United States, exporters declare that the total of foreign steel sales made this month were as large and probably larger than the sales they made during January. Since the recovery in the export business December has been the most prosperous month. The total of February export sales may not be so large as those in December, but they are far above the sales made during February, 1921. The trend today is such as to lead exporters to declare that the business has at last completely recovered from the general business depression.

Buying for export is now on a more orderly basis than it has been at any time since the war. There is a better appreciation of the competitive ability of European producers, and the disparity in exchanges is working out its own solution. American steel is sold on a price basis fixed by the competitive conditions in the consuming markets. This frequently necessitates a quotation below the domestic price on the same commodity, but the situation is but natural to export conditions. For instance, tin plate is being sold today in Japan at approximately $5.25 a base box, c.i.f. Japanese port. When freight and insurance is deducted from this, it makes the export tin plate sell at about $4.25 a base box, American mill.

It is just as necessary to quote a special price on other American products to obtain the business. A notable example of this is the case of rails. It was reported last week that a Japanese house had quoted American heavy steel rails at $42 a ton, c.i.f. Darian. This, however was, denied. It is understood that these particular rails, 7000 tons intended for the South Manchuria railway, were sold for approximately $43.50 c.i.f. After deducting the freight and insurance this would work out to a low price at the American mill.

The Japanese have an advantage in that their exporters own steamship lines which will carry the product from American shores. These lines receive a government subsidy, and while it would look as though the Japanese merchant is suffering a loss on the sale of the products, he is making it up on the freight received by his steamship line. The lines running to the Orient must at present be making money, as steel exporters declare it is difficult to purchase space on them for the movement of their shipments. The boats are taking out American wire products, structural steel, rails, bars, sheets, tin plate and miscellaneous commodities. The Japanese purchases of heavy rails in the United States during February have compared favorably in total tonnage with the purchases made of our mills by our own railroads.

The 7000 tons of rails purchased for the South Manchuria railway were of the 100-pound class. Japan is now inquiring for about 5000 tons of 60-pound rails, and is also asking for 5000 tons of light rails. The latter are intended for the imperial government railways, and it is understood that the United States Steel Products Co. has quoted on them a price of $42, per ton, c.i.f., Japanese port.

Japan has purchased 1000 tons of structural material, and a Japanese house has now in hand an inquiry for 325 tons more of similar material. Another export house holds a Japanese inquiry for 300 tons of bridge material. Suzuki & Co. have purchased 10,000 boxes of tin plate of oil-can sizes, and there are several small Japanese inquiries in the market for tin plate.

Export houses generally report that there is a veritable flood of merchant inquiries in the market from the Far East, and it is judged from this that the business for March will exceed anything done so far this year. Heretofore the business has been limited largely to governmental projects and orders for material for those jobs have been handled almost exclusively by Japanese houses with branches in New York. Merchant inquiries and orders, however, are divided among the American exporters as well. One Japanese merchant with a New York branch declared last week that a total of over 1000 tons of steel for merchant stocks in Japan had been purchased. The purchases included nails, rods, wire and black sheets.

An American house reported the receipt of inquiries from the Straits Settlement for sheets and tin plate. Tonnages were not mentioned and it is believed that the inquiries were intended to test the market. The prospective purchasers suggested that it is their belief prices now quotable on the American products are such that orders can be diverted from Europe to the United States. This indicates that the differential on European exchange is working to the detriment of European sales.

There is still pending in the market a Chinese inquiry for $30,000 worth of parts for railway rolling stock.

South American markets are still stagnant. From the west coast comes an occasional order for bars or pipe, whereas Argentina and Brazil are again purchasing plantation equipment. The latter countries are sending in frequent small inquiries for wire products and some minor orders are being booked. They also are inquiring for tin plate and sheets. For the moment England is able to underquote American producers on both of these commodities. The few orders that are available are going to Europe.

Some of the influential independent steel mills are still quoting $2.35, Pittsburgh, on plain galvanized wire for export to Argentina. This is entirely too high to win the business.

A further indication of the improvement in trade conditions with Brazil is reported in the resumption of negotiations with New York engineers to build a large electric power plant at Rio de Janerio. This project will necessitate the spending of several million dollars, and most of the supplies will be purchased in the United States. While the engineers have sailed for Rio, it is understood that it may be a month or two before work is actually started on the construction of the plant.

Seek to Cut Fire Hazard

Washington, Feb. 28.—A series of tests in metal mines is being conducted by the federal bureau of mines to investigate the use of permissible explosives in the place of gelatine or nitroglycerine dynamites when blasting out timber in metal mining, with a view of lessening the fire hazard. Tests have been made so far in mines in South Dakota and Arizona.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

PURCHASE recently was made by the Mead-Morrison Mfg. Co., East Boston, Mass., of the plant of M. Beatty & Son, Welland, Ont. manufacturers of marine equipment. It will be operated as the Canadian Mead-Morrison Co., Ltd., and will be in charge of D. W. Coe, who will have headquarters in Montreal. Mr. Coe was formerly connected with the East Boston offices. John R. Story Jr. will be chief engineer. Formerly he was assistant engineer at East Boston, where he was succeeded by F. O. Snow. Several other members of the Welland staff are also from the East Boston offices. The Mead-Morrison company will continue the production of marine equipment, such as has been manufactured at the Wellington plant heretofore, and in addition, it will build its regular line of hoists. While expansion of facilities at the Welland plant is contemplated, no definite plans have as yet been made. The Mead-Morrison company, through its new subsidiary, has recently booked an order for a large winch for the cable ship RELAY.

* * *

EIGHTEEN submarines are to be brought to the plant of the New London Ship & Engine Co., Groton, Conn., within the next few months, and the company will install new engines and new shafts in all of them.

* * *

MORRIS SHAPIRO, president of the Boston Iron & Metal Co., Baltimore, recently purchased at public auction the plant and property of the C. A. Gambrill Mfg. Co. at Ellicott City, Md. The purchase price was $300,000.

* * *

THE Lucius Mfg. Co., Uhrichsville, O., a new company engaged in the manufacture of tanks, has commenced operations. Orders already received it is said, will keep the plant in continued operation for fully 12 months. C. V. Lucius is secretary-treasurer of the company.

* * *

COAL washing equipment formerly manufactured by the Coal Washing Equipment Co., Pottsville, Pa., now is being manufactured by the Hardinge Co., 120 Broadway, New York. The equipment consists of an automatic balanced jig and a combination pulsating classifier and table.

* * *

CHARLES H. Oslund, president of the O. & J. Machine Co., Worcester, Mass., has invented, perfected and patented an automatic continuous wire drawing machine. He has completed no less than 70 inventions, all of which are now in some practical use in this country.

* * *

TO properly finance the business, the Prairie du Chien Tool Co., Prairie du Chien, Wis., has authorized an increase in capitalization from $50,000 to $150,000. The industry was established about four years ago and makes mechanics' tools, grinders and similar devices.

* * *

MACHINERY for making automobile license plates will be installed in the state penitentiary at Walla Walla, Wash., by April 1. The plant will cost approximately $15,000. Steel for the work is beginning to arrive. All the state license plates for 1923 will be turned out by the state institution.

* * *

AT ITS annual meeting held Feb. 22, the Baldwin Chain & Mfg. Co., Worcester, Mass., elected the following officers: President, George T. Dewey; vice presidents, James H. Kendall and William F. Cole; treasurer, William H. Gates; and directors, the officers and Arthur W. Warren and William A. Rockenfield.

* * *

STOCKHOLDERS of the Bethlehem Laboratories, Inc., recently voted to increase the company's authorized capitalization from $500,000 to $2,000,000 and to move its main office from Bethlehem, Pa., to Pittsburgh. The following directors were elected: Homer D. Wildmans, Taylor Alderdice, Dr. John K. Bowman, Joseph H. Bials and Dr. J. J. Reilly.

* * *

RECENTLY the National Machine Co., Hartford, Conn., elected the following officers: President, S. M. Weatherby; secretary and treasurer, William F. Loomis; assistant secretary, F. J. Palmer; assistant treasurer, A. M. Marsh; directors, F. C. Billings, William F. Loomis, Silas Chapman, Jr., S. M. Weatherby, Horace H. Ensworth and C. F. Fraunneberger.

* * *

STOCKHOLDERS of the Bristol Brass Corp., Bristol, Conn., at the annual meeting held Feb. 24, re-elected the same board of directors, with the addition of Frank H. Johnson and Herman A. Schmarr, New Britain, Conn. The directors re-elected Albert F. Rockwell, president; A. D. Wilson, vice president, and Julian R. Holley, secretary and treasurer. Carl Gustafson was appointed cashier.

* * *

ORDERS for two steam engines of 13,000 horsepower each, said to be the largest prime mover of this type ever built, have been placed with the Nordberg Mfg. Co., Milwaukee, by LaBelle Iron Works, Steubenville, O. The machines are of special design and will require about a year to complete and install. According to Bruno V. Nordberg, president of the Milwaukee company, the order involves about $500,000 and will mean some enlargement of the working schedules as well as the working force of the shops.

* * *

AT THE recent annual meeting of the Greenfield Tap & Die Corp., Greenfield, Mass., these officers were elected for the ensuing year: President, Frederick H. Payne; vice president and general manager, Francis G. Echols; vice president, Edward Blake Jr.; secretary and controller, Leon M. Lamb; clerk, Charles N. Stoddard; treasurer, Frank A. Yeaw; assistant treasurers, Frederick E. Hawks, Joseph G. Stevens and Francis A. Smith, Tauton, Mass., and directors, William M. Pratt, Francis G. Echols and Edward Blake Jr. The hold-over directors are Charles Allen, James Dean, Franklin Judge, Frederick H. Payne, Joseph W. Stevens and Charles N. Stoddard. The annual reports of the officers showed that the company lost money last year for the first time in its history of 50 years.

February Tool Demand Small

Trading of the Month Is Less Spirited Than in January, but Single Tool Orders Are Fairly Numerous—Large Inquiries Indicate a Prospective Demand of Size—Interest in Cranes Is Reviving

CONTRARY to expectations, trading in machine tools and shop equipment during February was less spirited than in the preceding two months. Orders for more than a single tool were rare and so far as can be learned, no really outstanding order was placed during the month. However, despite the lack of large sales, single unit orders have been fairly numerous, and considered from a seller's viewpoint, the month's transactions constitute a fair volume of business. Probably the most encouraging development during the month has been the continued influx of inquiries reported by dealers in all sections of the country. These have not been limited to requests for prices on single units. Many of them involve as many as 12 and 15 tools and while it is thought some are but price feelers, it is obvious that many of them represent needs, if not actual at least prospective, which eventually will turn into orders.

Secondhand Tools Are Preferred

THERE has been little demand for new tools. Practically all the orders placed during the month were with dealers in used equipment. Preference for secondhand tools, is due to the extremely low prices available on such equipment, whereas most new tools are at the levels established several months back, which users maintain are far too high. Tool users apparently will confine their equipment purchases to secondhand machinery just as long as the tools available in this market are offered at the low prices now being named. During the month a number of manufacturers announced price reductions. These include a reduction of approximately 15 per cent on hack saws by the Racine Tool & Machine Co., one by Warner & Swasey, Cleveland, of about 25 per cent on turret lathes and one of about 25 per cent by the National Acme Co., Cleveland, on its lines of automatic screw machinery.

Auction Sales Attracted Attention

DURING the month many auction sales of surplus equipment were held. These attracted considerable attention, especially on the part of dealers. Good machinery was disposed of at low prices and while dealers in the main were the purchasers actual users took some of the offerings. One of the largest transactions of this kind during the month, while not actually an auction, was the taking over of exclusive rights by a Cleveland dealer to dispose of approximately $200,000 of surplus equipment of a Middle West automotive interest. These tools are said to be in exceptionally good condition. A lot of surplus equipment of the Standard Parts Co., Cleveland, was auctioned off during the month.

Some Large Orders Were Placed

WHILE exceptionally large sales were lacking during the month there were a number of orders placed which were fairly large and which to some extent gave the market the appearance of activity. These included the purchase of $15,000 of equipment by the Hammond, Ind., board of education, 20 lathes by the Avarc Mfg. Co., Anderson, Ind., 10 miscellaneous machines by a Cincinnati valve manufacturer, seven turret lathes by a Michigan interest, 12 grinders by a Detroit motor manufacturer and 10 shapers by an eastern company. In addition the International Nickel Co. and the Westinghouse Electric & Mfg. Co. were reported to have closed on some tools.

Dealers Report Inquiries Are Numerous

INQUIRIES, during the month, were reported by dealers not only as being numerous, but many of them were exceptionally large. While many of these, it is understood, have been up for figures before and it is thought will not develop into business, a few are thought to represent legitimate needs and will eventually be placed. A number of the larger inquiries to come out during the month include two lists from the General Electric Co., Lynn, Mass., one calling for bids on 42 tools, and the other for figures on 30 machines; another large list calls for 20 tools and was issued by the Wheeling Steel Corp., Wheeling, W. Va. The Zigler Mfg. Co., Alexander, Ind., during the month came into the market for approximately 12 miscellaneous tools, while the Cleveland board of education entered the market for seven tools, five of which were for woodworking. Approximately $25,000 of equipment was inquired for by the H. B. Smith Co., Westfield, Mass., while the Lamson Co., Boston, asked for prices on three pipe machines and the Ford Motor Co., Detroit, placed a small list current. The Otis Elevator Co., New York, was another interest to enter the market, asking for 9 tools. An outstanding feature of the month was the rejection of all bids which were submitted on the 22 tools required by the Western penitentiary. It is understood these tools are to be purchased separately and as needed. The railroads were active inquiring interests. The New York Central asked for prices on five tools; the Sewell Valley railroad revived an old inquiry for four or five machines. The Nickel Plate railroad asked for quotations on 12 tools, the Hocking Valley for prices on seven and the Witchita Northwestern on three.

Export Inquiries Increasing

EXPORT demand for machine tools appear to have revived to some extent. While actual export orders were few and small, a number of fairly sizable inquiries were received. Probably the largest export tool inquiry now being worked on is for the machinery and equipment for the Mexican National railways. It is understood this inquiry is receiving considerable attention. Another large list for export is one issued by Mitsui & Co., Ltd., New York, and calls for 48 miscellaneous machines.

Crane Demand Is Reviving

A REVIVAL of interest in cranes and allied equipment is shown by the number of inquiries in the market. During the month orders for this equipment were few but users appear to be seriously considering their requirements in this line, as a number of old lists were revived and placed in the market. Two of the largest lists for cranes to be placed before makers in many months includes one from the Wheeling Steel Corp., Wheeling, W. Va., asking for quotations on 20 for its new plants, and another from the Riter-Conley Co., Pittsburgh, asking for bids on six. Railroad appear to be showing more interest in this kind of equipment, one order for a special gantry crane having

Secondhand Tools Are Preferred

Actual Needs Dictate Purchases—One Interest Closes on 24 Tools but Most Orders Are for Single Units—Automobile and Implement Makers Show More Interest in Machinery Offerings—Crane Demand Improving

BUYING interest in machine tools and shop equipment is at a low mark. In the past week the largest individual order noted was one for 24 tools placed by the H. B. Smith Co., Westfield, Mass. All of this machinery was of the secondhand class. Practically all other sales noted were of the single-tool variety and even these were less numerous than has been the rule for some time indicating users are confining purchases to actual needs. The most encouraging feature of the market has been the continued influx of inquiries. These generally call for single machines, but they are numerous and it is thought represent sizable business in the future. The Wheeling Steel Corp.'s list for 20 tools is the largest current. Several railroad lists are being worked on but action on them is not likely at this time. Sellers of machine tools are interested in the project of the H. H. Franklin Mfg. Co., Syracuse, N. Y., which plans to build 4-cylinder motor cars. It is understood that the automobile and agricultural implement makers' demands are appearing in greater volume.

Inquiries for cranes continue to be received in fair volume, but orders are slow in being placed. However, one large order was placed during the past few days, the Riter-Conley Co., Pittsburgh, purchasing four cranes against its recent inquiry for six. A number of other crane sales were noted but none was of consequence. The largest crane inquiry current is that of the Wheeling Steel Corp. action on which as yet has not been taken. Foundry equipment demand has slowed up somewhat, but some manufacturers report a fair volume of business. With the resumption of building operations in the spring better demand is expected.

Machinery Users' Purchases Still Are Limited

NEW YORK, Feb. 28.—Sellers of machine tools in this district are perplexed over the continued dullness. January, they point out, was better than they anticipated, but February, which they believed would be more active, has slumped off, business being virtually at a standstill. Even new inquiries are coming out in lesser volume. The railroads are showing little or no interest. Included among the few outstanding inquiries is a list of several machine tools for the Otis Elevator Co., this city.

Considerable interest is being manifested in reports that the H. H. Franklin Mfg. Co., Syracuse, N. Y., is contemplating the acquisition of an additional plant. Directors of the company have voted to spend $5,000,000 for this purpose, but whether the company will build a new plant or acquire one already erected, has not been decided. It is reported the Franklin company has recently been negotiating with the receivers of the Willys Corp. for the Duesenberg plant at Elizabeth, N. J. The new plant is to enable the company to put its 4-cylinder car on a quantity production basis.

Crane inquiry is being maintained in relatively fair volume, but orders continue to come out slowly. In fact, only two or three sizable jobs have been reported, including the award of a 7½-ton transfer crane, with 31-foot span by the David H. Smith Co., Brooklyn, to the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y. The Vulcan Rail & Construction Co., Maspeth, L. I., has purchased an air hoist.

The Anderson Meyer Co., 80 Wall street, is inquiring for a special crane to be mounted on a standard gage car. The crane, it is understood, is for export to China. Other inquiries include three overhead cranes for Japan, specifications for which have been issued by Okura & Co., 30 Church street, and a grab bucket crane for a concern in this country. The latter is the revival of an old inquiry. Philip & King, 30 Church street, have sold a 20-ton and two 30-ton locomotive cranes, with 50-foot boom, to the Grey Steel Products Co., 111 Broadway.

Sellers of foundry equipment report business has slowed up and February demand has not been as favorable as that of January. Buying has been scattered and orders were principally for single items. Inquiry has been well maintained. There is little new construction necessitating equipment. The American Car & Foundry Co., 30 Church street, New York, is inquiring for 600 tons of structural steel for an addition to its plant at Huntington, W. Va., but as far as can be learned, little foundry equipment will be required.

While Booth & Flinn, Ltd., New York and Pittsburgh, are low bidders on the general contract for erecting the New York-New Jersey vehicular tunnel, the formal contract has not been awarded owing to legal complications.

Equipment Buying Is On Small Scale

CLEVELAND, Feb. 28.—Machine tool and shop equipment dealers report demand for their wares is on a level with a week ago. Orders still are confined principally to single items, with one involving two or three tools, being noted occasionally. During the past week so far as can be learned, the largest individual order was one for three machines placed by a Chicago manufacturer with a Cleveland dealer. Numerous other single tool sales were noted, but all were of little or no consequence, insofar as effecting the market.

Inquiries continue to be received at a great rate. A Cleveland dealer is in the market for a 150-inch plate planer for a Macon, Ga., interest, as well as a heavy plate drill. An inquiry for 10 miscellaneous machines has been received by this dealer from a Chicago company and three tools, consisting of an upsetter, bolt cutter and a tapping machine, have been inquired for by an Ohio manufacturer. The list of the Atchison, Topeka & Santa

Fe railroad is being worked on by some local dealers. An addition to this list asks for quotations on a 36-inch lathe. Some other inquiries include ones from J. Loss, 1228 Winamac avenue, Chicago, for a lathe and drill press; the Midwest Die & Stamp Co., Chicago, which wants a screw machine; the Monarch Tool & Machine Co., Chicago, which asks for quotations on a punch press; the Union Special Machine Co., Chicago, wants a square shear, and the Greenley Machine Co., Adams, N. Y. wants a milling machine and a shaper. In addition to these, the Philadelphia highway department has issued a list and the Cadillac Machinery Co., Detroit, is in the market for a press. A Cleveland dealer also reports the receipt of a number of inquiries for foundry equipment, four of which are for fairly sizable amounts.

While prices for new machinery in the main are being maintained some weakness is noted. The Warner & Swasey Co., Cleveland, has announced a reduction on its lines, and new prices are also being quoted on the lines of the National Acme Co., Cleveland, manufacturer of automatic screw machinery. Secondhand machinery prices are exceptionally low and consequently most orders are being placed with dealers in this class of equipment.

Crane Demand Is Improved

PITTSBURGH, Feb. 28.—As February closes, crane orders are in the ascendency in this district. During the past week the Riter-Conley Co. purchased four cranes to be built by the Shaw Electric Crane Co., Muskegon, Mich. It purchased a 10-ton crane with 5-ton and 10-ton trolleys, one 7½-ton with two 5-ton trolleys, and two 3-ton cranes with single trolleys, floor-controlled. A Sharpsburg foundry company took a 5-ton yard crane. Recently the Ellwood City Forge Co., Ellwood City, Pa., closed on a 15-ton crane with 60-foot span and a 5-ton auxiliary hoist. The Pennsylvania Rubber Co., Jeannette, Pa., bought a one-ton hoist, and another interest took a small crane and a hoist. An oil well supply company at Oil City, Pa., bought a 15-ton locomotive crane, and a large bridge having a capacity of about 300 tons per hour was sold to a Buffalo company. Based on these sales and the large number of inquiries, including those of the Wheeling Steel Corp., Lorain Steel Co., and the American Car & Foundry Co., crane sellers are much encouraged.

Machine tool sellers have passed another quiet week. The largest inquiry current here is the list of 20 referred to last week from the Wheeling Steel Corp. for Portsmouth, O., which includes lathes, boring mills, turret lathes, motor-driven grinders, shapers, etc. The sale of a 31-inch motor-driven drill to an out-of-town user is noted while another interest closed on an 8-inch pipe machine. Sellers of used equipment report a fair aggregate of sales although individual orders are small. Lathes, drill presses, grinders, etc., are included. One small shop in Morgantown, W. Va., closed on a lathe, drill press and grinder while another user is about to place an order for five small machines. The Doylestown, Pa., high school is understood to be preparing a list of equipment for its new vocational department.

Foundry equipment has been quite active. The Lorain Steel Co. closed with a Pittsburgh seller for a number of flasks, a turntable, tumbling barrel, two 4000-pound buggy ladles, and four 600-pound trolley ladles. A motor-driven blower was sold to a foundry in Washington, Pa., and a motor driven testing machine has been disposed of for shipment to South America. The Sharpsburg Foundry Co. is in the market for a cupola, several flasks, etc.; the Clifton Pratt Co., Cincinnati, wants four tumbling mills, one cupola and one sand blast outfit while a new foundry recently granted property in the Pittsburgh district is negotiating for its equipment including two 108-inch cupolas, a motor-driven blower, sand machinery, flasks, etc. A foundry near Columbus, O., wants five hand-squeezer molding machines while the Commonwealth Steel Co., Granite City, Ill., is negotiating for several molding machines. The National Radiator Co. recently bought one from the Herman Pneumatic Machine Co. while the National Supply Co., Toledo, O., has purchased two large rollover machines from the same manufacturer for shipment to the Union Tool Co., Torrance, Cal.

Inquiries and Orders Slump

BOSTON, Feb. 28.—Inquiries for tools and shop equipment have fallen off slightly as compared with a week ago. However, sales are fairly numerous, secondhand equipment moving in much better volume than the new. During the past week the H. B. Smith Co. was the leading buyer of this district. This interest closed on its list of 24 tools for which it has been inquiring for some time. All of the machines were of the secondhand class. The General Electric Co., Lynn, Mass., was also a buyer of the week, three vertical milling machines being taken from a dealer here. A paper manufacturer was also a local buyer, several shapers and two lathes being disposed of to this interest.

Prices continue to be the dominating factor in the closing of orders. Nevertheless new tool prices are being held rigidly to the established levels and consequently most of the business is going to dealers in secondhand tools, as this class of equipment is being offered at exceptionally low prices.

There is no noticeable improvement in orders or inquiries for cranes and allied equipment. However, the outlook is reported to be brighter than it has for some time, in view of the fact numerous projects, which had been postponed, now are being revived.

Machine Tool Demand Falls Off

LOS ANGELES, Feb. 24.—Trading in the machine tool and equipment market here has eased off somewhat during the past two weeks. The recent heavy frosts in this district, which did an estimated damage to the citrus crops of between $40,000,000 to $50,000,000, it is thought will have an adverse effect upon the machine tool market. No large lists have come out lately, single tool requirements making up the bulk of business. Among recent sales noted are a thread miller, which went at about $9000, a 9-inch lathe to the Fawner Foundry Co. of Hyde Park, an 8-inch lathe to the Bird Shellaby Co., a multiple spindle drill and an 8-inch lathe to the Polytechnic high school and a 6-inch, quick-change engine lathe to the Jefferson school.

A local manufacturer of a crank pin re-turning tool states an increasing amount of inquiries are coming in each week from eastern districts and orders already are taxing capacity. Demand for woodworking machinery continues in fair volume. Continued activity in the oil fields is resulting in many sales of oil country tools.

Improvement in Inquiries Noted

CHICAGO, Feb. 28.—Dealers in machine tools report a quickening of inquiry on the part of small users. This inquiry is for single tools or occasionally two or three pieces of light equipment, nothing of a general nature or a large list being in evidence. Much of the inquiry never goes beyond the stage of quotation and it appears lack of financing prevents purchases. In a number of cases it is noted mechanics out of work are unit-

ing their interests and starting small shops for which they are seeking equipment. Usually they have little resources and desire more credit than can be extended. In the experience of several dealers February will prove a fairly good month with its aggregate of small buying, although large business has been noticeably absent. Prices are practically unchanged, and no indication of a further reduction is now seen. Railroads continue out of the market and inasmuch as the greater part of their car repairing is being done in outside shops it seems likely they will not buy tools heavily for some time.

Outlook For Tool Demand Improves

MILWAUKEE, Feb. 28.—Hope of a more distinct improvement in the demand for machine tools grows more substantial. One of the things which makes the outlook more promising is renewed inquiry from the agricultural equipment industries, while the automobile industry is entering the market on a large scale. Manufacturers of prime movers and generating machinery are getting some large individual orders and the foundry and machine shop trade as a whole is able to increase working forces as well as hours of work through the development of orders. For the present these do not require any material enlargement of facilities, although new machine tools are needed for replacement as well as special processes. Manufacturers in urgent need of tools are able to pick up used machinery at a marked reduction under the cost of new equipment and show preference in this direction.

Tool Sales Are Gaining

TORONTO, Ont., Feb. 28.—Steady improvement in sales continues in the Canadian machinery and machine tool market. Dealers and manufacturers say demand is becoming more active. Many equipment users are in need of new machinery and tools but are holding back from entering the market as long as possible. The automotive industry and the municipal governing bodies are the best prospects and the greater part of the present buying is coming from these sources. There is also a fairly good buying movement by users who need one or two machines for replacement purposes. Rebuilt tools ars in fairly good demand, but it now appears the tendency of buyers to purchase new equipment. Demand for small tools continues to hold.

During the past few days announcements have been coming in regarding increased activities among plants producing machinery, tools and general equipment. The Canadian Tank & Pump Co. reports business exceptionally brisk. The Engineering & Machine Works, St. Catharines, Ont., has received an order for 10 marine boilers. Eight of these are for delivery at Three Rivers, Que., and two for Collingwood, Ont. This order will keep the boiler department of the plant going night and day for the next three months. The Canadian Westinghouse Co., Hamilton, Ont., has a contract for one 450-horsepower motor from the city council of Hull, Que.

In addition to those who have recently awarded contracts for equipment dealers say there are still a number of inquiries coming forward for a diversified line of equipment. J. Vance, Coppin, Ont., is asking for complete sawmill equipment. The Dover Oil Co., Bell River, Ont., is asking for general equipment including tanks, piping and drilling machinery. The Greb Shoe Co., Kitchener, Ont., is in the market for special machinery and equipment. The London & Port Stanley railway, Phillips street, London, Ont., is in the market for a derrick clam shell bucket and unloading and operating equipment for coal unloading. The Findly Range Co., Carleton Place, Ont., is having plans prepared for an addition to its foundry for which it is expected equipment will be purchased.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

East of the Mississippi River

BIRMINGHAM, ALA.—The American Cast Iron Pipe Co., Sixteenth and Thirtieth avenue, plans a pattern shop.

BRIDGEPORT, CONN.—The Fabric Machine Co. has been incorporated with $50,000 capital stock by Joseph J. Musante, Clifford J. Lewis and Arthur E. Bromber.

HARTFORD, CONN.—The Hartford Electric Light Co. has let the contract for a 1 and 2-story plant addition, 75 x 155 feet.

HARTFORD, CONN.—Bids closed recently for a 1-story, 50 x 250-foot addition to the factory of the Bush Mfg. Co., maker of radiators.

NEW HAVEN, CONN.—The Roberts Mfg. Co., maker of tool specialties, has increased its capital stock from $100,000 to $125,000.

NORWALK, CONN.—The Nash, Raymond & Dean Co. has been incorporated as a sheet metal worker with $25,000 capital by H. R. Nash, J. S. Raymond and Richard Dean.

NORWALK, CONN.—The Axilla Safety Razor Co. has changed its name to the Fleury Axilla Safety Razor Co., its location to Bridgeport, Conn., and its capital stock to $100,000.

WILMINGTON, DEL. — The Thompson Spring Co, has been organized by local capital to manufacture an automobile spring and shock absorber and will begin active operation soon.

JACKSONVILLE, FLA.—The Smith Steel Co. has been incorporated with $10,000 capital stock by L. Smith and B. B. Shields.

JACKSONVILLE, FLA.—The Florida Filter Corp. has been incorporated with $20,000 capital stock by W. J. Wood, W. E. Dunbar and others.

MIAMI, FLA.—The Pullen-Zoll Electric Co. has been incorporated with $150,000 capital stock by Claude E. Pullen, Robert Henkel and Robert I. Zoll.

CHAMPAIGN, ILL.—The Illinois Traction Co. is reported planning a power plant at Decatur, Ill.

CHICAGO—J. Nielsen plans a machine shop, 75 x 96 feet, at 2704-10 West Lake street.

CHICAGO—The Briskin Mfg. Co., 215 South Hoyne street, plans a factory building, two stories, 50 x 127 feet, to cost $25,000.

CHICAGO—The Lakeview Iron Works has increased its capital stock from $10,000 to $15,000.

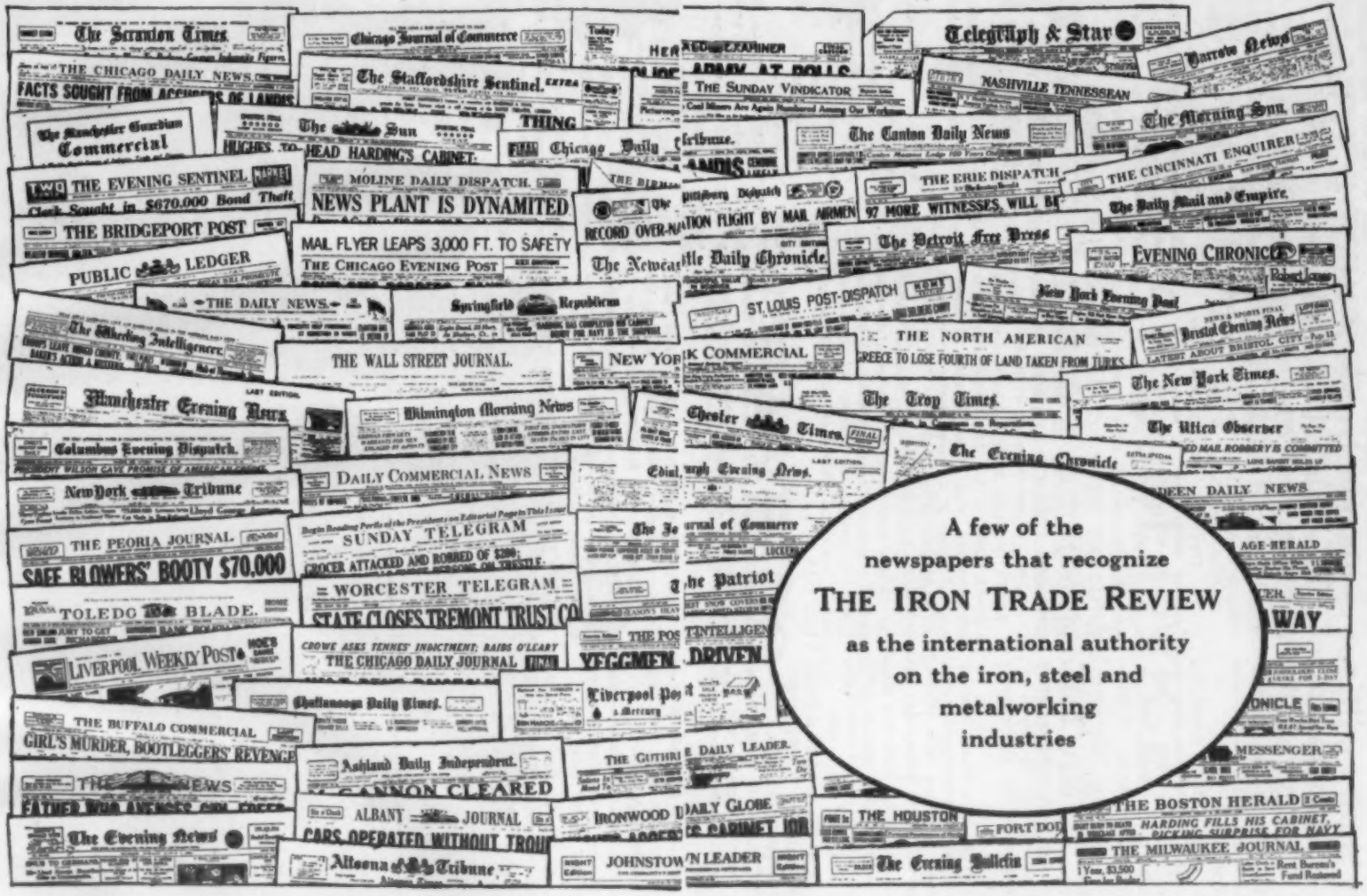
CHICAGO—The F. P. Smith Wire & Iron Works, 2346 Clybourn avenue, plans a 3-story plant addition, 25 x 40 feet.

CHICAGO—The Marx Sign Co., 102 North Franklin street, has been incorporated to manufacture and deal in signs and metal work, by Daniel Burkhartsmeier, Albert Dahlenburg, Fred Arthur and others.

CHICAGO—Fallberg & Olson, Inc., 341, 53 West Jackson boulevard, has been incorporated with $50,000 capital stock to manufacture and deal in lathes, machinery, tools, etc., by Carl A. Olson, G. A. Olson and Carl Fallberg.

CHICAGO—The Kammers Mfg. Co., 5941

Quoted by the world's leading newspapers



THE IRON TRADE REVIEW — CLEVELAND, U. S. A.

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South Loomis boulevard, has been incorporated with $50,000 capital stock to manufacture and deal in automobile accessories, etc., by Matthew Kammers, John Pleet and George Paget.

CHICAGO—The Ike Williams Iron & Steel Co., room 1016, 20 South La Salle street, has been incorporated with 10,000 capital stock by Isaac Williams, Ben Rothbaum and H. C. Levinson.

CHICAGO—The Peerless Pneumatic System, Inc., 108 North Jefferson street, has been incorporated with $15,000 capital stock by Howard G. Bartling, Frank Culhine and John J. Dowdle, to manufacture and deal in devices operated by compressed air.

CHICAGO—The Central Illinois Power Co., 72 West Adams street, has been incorporated with 10,000 shares of no par value, by William L. Latimer, George T. Crossland, L. J. Clark, E. V. Graham, Ralph D. Stevenson and others.

CHICAGO—David A. Wright, Inc., 100 South Jefferson street, has been incorporated with $1,200,000 capital stock to manufacture and deal in machinery, etc., by David A. Wright, H. N. Wright, Adolph G. Schroeder and others.

EAST PEORIA, ILL.—The Crown Foundry Co., Hersheel street, has been incorporated with $16,000 capital stock by Frank Barr, O. B. Slater, H. E. Hire and J. D. Armstrong.

TAYLORVILLE, ILL.—The Cabirange Mfg. Co. has increased its capital stock from $250,000 to $750,000, and plans to move to Granite City, Ill., where a new plant is being erected.

BOSTON, KY.—The Boston Light & Power Co. has been incorporated by R. W. Atcher, N. B. Langsford and Charles S. Sprig.

CENTRAL CITY, KY.—The Triangle Machine Works has been incorporated with $25,000 capital stock by S. J. Gish, Louis Cohen and George Baker.

LOUISVILLE, KY.—The Ohio Nut & Bolt Co. has been incorporated by H. G. Wilkinson, F. B. Ayers and Robert F. Vaughan.

LOUISVILLE, KY.—The Graft-Bright Mfg. Co., 441 East Jefferson street, has been organized to manufacture garden hoes, etc.

MARION, KY.—The J. E. Gass Mail Device Co. has been incorporated with $35,000 capital stock by J. N. Boston, J. A. Hughes, R. I. Nunn, Walter Leiter and J. A. Steger.

AUGUSTA, ME.—The Farnsworth Co. has been incorporated with $500,000 capital stock by I. S. Kearney and E. Maynard Thompson.

PORTLAND, ME.—The Smokeless Locomotive Co. has been incorporated with 10,000 shares of no par value to build locomotives, etc., by P. E. Coyle and H. P. Sweetser.

BALTIMORE—The Birmingham Metal Co., 231 South Exeter street, has been incorporated by Charles H. Birmingham, Joseph C. Rintelen and John P. Simon.

BALTIMORE—The Tobacco Feeder Co., 227 North Holliday street, has been incorporated with $20,000 capital stock by William Hollingsworth, Milton Werthheimer and Albert A. Heyman.

BOSTON—The city is to build a bascule bridge to replace the present temporary structure at the Chelsea south draw, at an estimated cost of $750,000.

BOSTON—The Vortex Carburetor Co. has been incorporated with $100,000 capital, by John J. Buckley, Lyman H. Morrison, Edward D Tuttle, Wollaston, Mass., and others.

BOSTON—The Peck Machinery & Supply Co. has been incorporaed with $50,000 capital by H. C. Peck, Stephen F. Peck and A. Edward Johnson.

BROCKTON, MASS.—Parker, Weatherill & Potch, Inc. has been incorporated with $50,000 capital to build machinery by George A. Parker, Leon S. Patch and Robert H. Weatherill.

EASTHAMPTON, MASS.—The Philipp Mfg. Co. has been incorporated with $50,000 capital to make hardware specialties by Reinhard Philipp and A. M. Philipp, both of Holyoke, Mass., and Ray E. Simmons.

EVERETT, MASS.—The Boston Elevated railway is to erect a repair plant of three buildings, the largest of which will be 356 x 650 feet, and the others, 50 x 150 feet.

LYNN, MASS.—The Hancock Perfecting Lineup Machine Co. has been incorporated with $100,000 capital to build machinery by Arthur S. Webster and Robert A. Jordan, both of Boston, Harry H. Hancock and Henry H. Sawyer.

NORTH ADAMS, MASS.—The North Adams Gaslight Co. is to increase its capital stock by $800,000 to make additions to the plant.

SPRINGFIELD, MASS.—The Springfield Hardware & Iron Corp. has been incorporated with $10,000 capital by Frank H. Shattuck, Charles F. Fay and Raymond B. Shattuck.

SPRINGFIELD, MASS.—The Williamson & Lawson Sand Co. has been incorporated with $25,000 capital stock to deal in sand for foundries, by Robert E. Lawson, Harley F. Williamson and James H. Mulcare.

WALTHAM, MASS.—The Rawson Moulding Co. has been incorporated to make dies and molded appliances with $50,000 capital, by Homer E. Rawson and Harold N. Michaelsen, both of Boston, and Alfred H. Grebe, Richmond Hill, N. Y.

WHITMAN, MASS.—The Whitman Electric Mfg. Co. has been incorporated to make electrical appliances with $25,000 capital, by George G. Roberts and George G. Roberts Jr., both of Quincy, Mass., Harry A. Goss and Leonard N. Baenziger.

KALAMAZOO, MICH.—The Kirsch Mfg. Co. plans a factory building, three stories, 130 x 200 feet, to cost $100,000.

LAWTON, MICH.—The Stafford Roller Bearing Co. is having plans drawn for a 1-story factory building.

BAYONNE, N. J.—The Bayonne Steel Products Co. is having plans drawn for a warehouse.

JERSEY CITY, N. J.—The South Branch Power Co. has been incorporated with $125,000 capital stock by Charles W. Alpaugh, Otto Wittpen and William Braun.

JERSEY CITY, N. J.—The Musconetcong Electric Co. has been incorporated with $125,000 capital stock by Charles W. Alpaugh, Bernardsville, N. J., Henry Herman and Fred W. Rugge.

MERCHANTSVILLE, N. J.—A 1-story, 60 x 175-foot plant for the manufacture of metal products will be erected here by the Norton Mfg. Co.

NEWARK, N. J.—The Lock Joint Rifle Co., Cornelia street and Albert avenue, plans a number of shop buildings, including a power house.

VIENNA, N. J.—William C. Hespe has acquired the foundry of Daniel D. Wolfe and will remodel it for the manufacture of stoves, ranges, etc.

BROOKLYN, N. Y.—The Tullin Iron Works has been incorporated with $20,000 capital stock by L. Tullin, M. and S. Tenick. The company is represented by M. S. Feller, 44 Court street, Brooklyn, N. Y.

BUFFALO—The Buffalo Chemical Fire Extinguisher Co., 67 Carroll street, has acquired a site for a new plant building, 100 x 300 feet.

BUFFALO—The Sparling Electric Products Co. has been incorporated with $50,000 capital stock by T. F. Sparling, W. H. Thomson and others. The company is represented by M. S. Short.

BUFFALO—The Lunz Mfg. Co. has been incorporated with $100,000 capital stock to manufacture automobile accessories, etc., by G. Lunz, P. H. Erber and G. Glehr. The company is represented by E. Pierce.

BUFFALO—The Buffalo Fuse Corp., electrical works, has been incorporated with $10,000 capital stock by H. F. Cunningham and W. J. Wetherbee. The company is represented by C. F. Ladd.

CARTHAGE, N. Y.—Leroy E. Sherman has been incorporated with $30,000 capital stock to make electric apparatus by L. E. Sherman, H. P. Post and L. G. Draper. The company is represented by A. F. Mills.

CORTLANDVILLE, N. Y.—The Willex & Haigh Machine Works has been incorporated with $20,000 capital stock by J. and A. J. Willex and W. S. Haigh. The company is represented by Tobin & Clark.

LONG ISLAND, N. Y.—W. H. Murphy, 404 Jackson avenue, plans a factory building, one story, 100 x 100 feet, to cost $25,000.

LOWVILLE, N. Y.—The Atlas Vise Co., Inc., plans a $25,000 2-story factory building. E. W. Fulton is president.

NEW YORK—The Kewanee Boiler Co. has increased its capital stock from $100,000 to $200,000

NEW YORK—The Yonkers Electric Light & Power Co., 9 Manor square, plans a 1-story power plant to cost about $250,000.

NEW YORK—The Sunnyside Bronze Foundry has been incorporated with $5000 capital stock by O. S. Berger, E. Rippel and J. Forman. The company is represented by A. Lipton, 160 Broadway.

NEW YORK—The Burin Bed Spring Co. has been incorporated with $8000 capital stock by A. Bloom, L. Friedman and R. Riell. The company is represented by I. Kaydetz, State Bank building, Brooklyn, N. Y.

NEW YORK—The D. M. Obler Maintenance Engineering Co. has been incorporated with $10,000 capital stock by D. M. and A. W. Obler and S. M. Davis. The company is represented by Davis & Davis, 1540 Broadway.

NEW YORK—The Joseph Deubel Corp. has been incorporated with $50,000 capital stock to make tobacco shredding machinery by J. Deubel, J. Promm and H. Scheer. The company is represented by J. Hovorka, 330 East Seventy-third street.

NEW YORK—The Calculator Equipment Corp. has been incorporated with 1000 shares of no par value and $5000 active capital to make calculating equipment, etc. The company is represented by Davis, Wagner, Heater & Holton, Mutual Life building.

CHESTER, PA.—Part of the plant of the Berry Engineering Co. recently was damaged by fire. The loss was estimated at $100,000.

DOYLESTOWN, PA.—A vocational department will be installed in a high school soon to be under construction to cost $75,000.

GRATZ, PA.—The Gratz Light & Power Co. has been incorporated by Elmer H. Coleman and others.

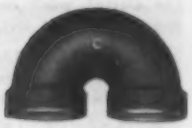
LANCASTER, PA.—The Armstrong Cork Co. plans a factory building, one story, 30 x 50 feet.

LANCASTER, PA.—The Dudley Watch Co. plans a factory building, two stories, 22 x 43 feet, and 22 x 97 feet.

NORRISTOWN, PA.—The Inter-State Safety Appliance Co., which was recently organized, will engage in the manufacture of safety devices. It is understood the company shortly will be in the market for equipment.

PHILADELPHIA—The Bloch Go-Cart Co., 1136 North American street, plans a 1-story power house.

PHILADELPHIA—The Moore White Co.



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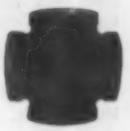

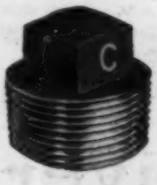

We are manufacturers of about 20,000 articles, including valves, pipe fittings and steam specialties, made of brass, iron, ferrosteel, cast steel and forged steel, in all sizes, for all pressures and all purposes and are distributors through the trade of pipe, heating and plumbing materials.

1855——— **CRANE CO.** ———1922

836 South Michigan Avenue, Chicago

You are cordially invited when in Atlantic City to make the Crane Exhibit Rooms (1105-1107 Boardwalk) your headquarters. We will be glad to receive any mail addressed to you in our care.

Works:-
Chicago, Ill. and
Bridgeport, Conn.

has started work on a foundry addition, two stories, 60 x 164 feet, to cost $33,000.

PHILADELPHIA—Bids were closed Feb. 25 by Eugene Stopper, architect, for a factory for Martin A. Halrath.

PHILADELPHIA—Fire recently damaged the plant of the Ritter Can Specialty Co. at Jefferson and Hutchinson streets.

PHILADELPHIA—A $65,000 warehouse and factory building will be erected by E. J. McAleer & Co. The structure will be five stories, 84 x 130 feet.

PHILADELPHIA—John H. Morice & Co. have closed bids, through Clarence E. Wounder, architect, for a mill building at Delaware & Dickinson avenues.

PHILADELPHIA—Bids have been closed by Harris & Richards, architects, on a factory addition for the Peerless Paper Box Mfg. Co., Inc.

PHILADELPHIA —A $1,750,000 cement plant will be erected near here by the Bath Portland Cement Co., Finance building. The works will include a machine shop, power plant, etc.

PITTSBURGH—The plant of the Enterprise Foundry Co. recently was damaged by fire.

READING, PA.—The sheet metal shop of the Philadelphia & Reading railroad recently was badly damaged by fire.

WILKINSBURG, PA.—The Goldie Mfg. Co. will start work soon on a manufacturing plant.

YORK, PA.—The York Sanitary Milk Co. is having plans drawn for a boiler house, one story, 44 x 52 feet.

PROVIDENCE, R. I.—The general contract has just been awarded by the Textile Finishing Machinery Co. for a 1-story, 200 x 250-foot machine shop, and a 2-story office building.

BELTON, S. C.—The Southern Foundry & Machine Co. has been incorporated with $10,000 capital stock by C. F. Cox, Lemuel Stansell and others.

SMYRNA, TENN.—The Smyrna Electric Light Co. has been organized by J. H. Edwards, E. A. King and others.

BRISTOL, VA.—A. E. Anderson and W. N. Canter plan to establish a plant for the manufacture of metal pencils.

ASHLAND, WIS.—Bids are being asked by the board of education for the erection of a 2-story addition to the high school, to be devoted entirely to manual training. It will be 65 x 110 feet and cost $120,000.

HURLEY, WIS.—Alvin J. Norman, president of the Norman Motor Co., will build a 2-story garage and repair shop, 50 x 155 feet, at a cost of $30,000.

MADISON, WIS.—The Hand-Case Sulky Mfg. Co., 108 South La Salle street, Chicago, has asked the Madison association of commerce to provide estimates of the cost of about 25,000 square feet of manufacturing space with a view of locating its permanent works here.

MANITOWOC, WIS.—Articles of incorporation have been filed by the Richards Iron Works. The capital stock is $125,000 and the incorporators are Henry C. Richards, John W. Barnes and Reuben I. Richards.

MENASHA, WIS.—A gray iron foundry and several additions to the machine shops and erecting floor will be built by the U. S. Tractor & Machinery Co. soon.

MILWAUKEE—A charter has been granted to the Argo Tool & Machine Mfg. Co., incorporated for $25,000, by Charles A. Phillips, Charles E. Helm and Arthur J. Huck, all of whom have been connected with the Chicago, Milwaukee & St. Paul railroad shops.

MILWAUKEE—The business of the Gorges-Baker Co., 531-533 Edison Avenue, Milwaukee, manufacturer of tools, has been incorporated under the same name, with $10,000 capital stock. The incorporators are William F. Borges, Charles Baker and Arthur F. Borges. The concern specializes in metal shears.

MILWAUKEE—Articles of incorporation have been filed by the Mar-Tan Motor Mfg. Co. The capital stock is $125,000 and the purposes are to manufacture engines, motors and other machinery. The incorporators are H. Wilkie, 78 Loan & Trust building; W. Tanhouser and A. L. Martin.

RACINE, WIS.—About $30,000 will be expended by the Jacobsen Auto Co. in the construction and equipment of a new garage, 85 x 112 feet, partly two stories.

RACINE, WIS.—A charter has been granted to the H. & D. Mfg. Co. to manufacture pistons and other gas engine and automobile accessories and parts. The capital stock is $10,000 and the incorporators are Martin Horeth, William C. and Walter F. Draeger and Charles Jenista.

RHINELANDER, WIS.—The Rhinelander Paper Co. is planning extensive changes and additions to its steam power plant.

SHEBOYGAN, WIS.—Bids are being taken for the construction of the second unit of the new Sheboygan high school, which will cost $1,500,000 complete. The second building will be devoted entirely to vocational training.

WAUKESHA, WIS.—A general sheet metal works has been opened at 139 West Broadway by J. W. Birthrong, for twenty-five years manager of the sheet metal department of the Perkins and other hardware concerns here. The business is styled the J. W. Birthrong Sheet Metal Co.

WEST ALLIS, WIS.—The board of education has decided to start work at once on a $75,000 addition to the high school built three years ago. This will be equipped for industrial training shops of various kinds.

West of the Mississippi River

DARDANELLE, ARK.—The plant of the Dardanelle Machine Works recently was damaged by fire.

BREA, CAL.—C. R. Gallagher & Co. have been incorporated to engage in the manufacture of bolted tanks for oil field and other uses.

LOS ANGELES—The Baker Casing Shoe Co. will erect a factory here to be devoted to the manufacture of oil well tools.

LOS ANGELES—The Wasserman Water Heater Mfg. Co., Burton street, plans a plant addition, 40 x 65 feet.

LOS ANGELES.—The Santa Fe railroad plans a 1-story addition to its machine shop at San Bernardino, Cal. The building will be 65 x 510 feet.

MODESTO, CAL.—The Power Implement Machine Works has acquired a site on which it plans a plant at an estimated cost of $25,000. J. J. Ferlin is president of the company.

NEWARK, CAL.—The James Graham Mfg. Co., maker of stoves, etc., plans a factory building at an estimated cost of $50,000.

OAKLAND, CAL.—The San Pablo Pattern Works recently was organized by J. C. McCausland, R. McIntosh and J. Griswold.

SACRAMENTO, CAL.—The A. Meister Sons Co., manufacturer of automobile bodies, etc., is planning a plant at Fresno, Cal., to cost about $150,000.

SAN FRANCISCO—The Pacific Earth Boring Machine Co. has been incorporated with $50,000 capital stock by D. S. Ledbetter, Standford Gwin and J. J. Meigs Jr.

PUEBLO, COLO.—The Arkansas Valley Railway, Light & Power Co. is erecting a power plant.

FAIRFIELD, IOWA—The Speeder Machinery Co. plans a new factory building.

OTTUMWA, IOWA—John Whistler, of Gibson, Iowa, plans a machine shop here, one story, 40 x 100 feet.

WATERLOO, IOWA—The Roth Packing Co. plans a 1-story power house.

BOSSIER CITY, LA.—The Shreveport Foundry & Machine Co. is reported planning to remove its plant here from Cedar Grove, La.

SHREVEPORT, LA.—The McDowell Ball Bearing Fishing Tool Co. has been incorporated with $250,000 capital stock by J. F. McDowell, and others. The company will establish a plant for the manufacture of fishing tools, etc.

KANSAS CITY, MO.—The Kansas City Light & Power Co., Fifteenth and Grand avenue, is reported making improvements to its plant.

KANSAS CITY, MO.—The Columbian Steel Tank Co. has purchased property adjoining its plant, which it is reported planning to utilize for a plant addition.

ST. LOUIS—The N. O. Nelson Mfg. Co., Chestnut and Thirteenth streets, plans a factory building to cost about $100,000.

ST. LOUIS—The S. G. Hoffman Magneto Co., 3932 Olive street, has broken ground for a 1-story plant building, 100 x 235 feet, to cost $50,000.

FARGO, N. D.—The Union Light, Heat & Power Co. plans a power plant.

BURBANK, OKLA.—The Burbank Electric Co. has been incorporated with $15,000 capital stock by R. L. Zoak, W. L. Sullivan and T. L. Miller.

TULSA, OKLA.—The Vera Light & Power Co. has been incorporated with $10,000 capital stock by W. L. Page, Erwin J. Dooner and H. O. Bland.

GRESHAM, OREG.—The Pacific Malleable Iron Co. has been incorporated with $50,000 capital stock by M. Moga and others. The company plans a foundry at a cost of $10,000.

WALLA WALLA, WASH.—Plans have been completed for municipal water works. Bids will be called for within 30 days. It is estimated the project will cost about $250,000.

AIRCO OXYGEN AND ACETYLENE SERVICE

IS GOOD SERVICE

An AIRCO "A" Welding Torch being used to repair a cracked locomotive cylinder.

AIRCO

Good Service First

Good oxygen and acetylene service is the foundation of welding and cutting success, and, therefore, should be one of the first things to consider when talking "contract."

With distributing stations all over the country, it pleases us to have the efficiency of Airco Oxygen and Acetylene Service analyzed by a prospective buyer

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*Denotes city contains both Airco Plant and District Office. Other cities contain only plants. Address nearest District Office.

Send for copy of Airco booklet "Cutting Cast Iron with the Oxyacetylene Torch." Mention Iron Trade Review when writing.

New Trade Publications

CRANE—The Byers Machine Co., Ravenna, O., is circulating a 4-page illustrated circular in which a tractor crane is described and illustrated. This crane has a capacity of 10,000 pounds at 10 feet on double line; 8000 pounds at 15 feet; 6500 pounds at 20 feet and 5500 pound bucket and load at 20 feet on single line. The machine with bucket weighs 14 tons.

WOODWORKING MACHINE—The Hutchinson Mfg. Co., Norristown, Pa., is circulating an illustrated folder in which a newly designed woodworking machine is described. In the folder the company offers a prize for a name for the new tool which, it is claimed, will perform 15 different woodworking operations. It is described as a portable planing mill.

PRESS ATTACHMENTS—The V. & O. Press Co., Glendale, L. I., N. Y., is circulating a 40-page illustrated booklet in which automatic attachments for power presses are described and illustrated. Attachments include feeds, straightening rolls, cutting dies, compressed air ejecting equipment, a numbering device, wire shaving attachment, etc.

DISK SANDER—The Oliver Machinery Co., Grand Rapids, Mich., has published a circular in which a portable, motor-driven disk sander is described and illustrated. This sander is designed for accurately sanding pieces such as segments, angles for built-up work, core print and circular work, taper work, etc. It will sand circular work up to 15 inches in diameter and duplicating work up to 7 inches in width. Complete specifications are given in the leaflet.

BORING BARS—The Hannifin Mfg. Co., Chicago, has published a 6-page illustrated folder in which an adjustable boring bar is described and illustrated. This bar is adapted for rough boring, finish boring, reaming and line reaming. According to the folder all parts of the bar are locked into one solid unit. The contact surfaces are large, straight metal surfaces, giving the bar the rigid and heat absorbing qualities of a solid bar. The bar is described in detail.

SHAFT COUPLINGS—The Kay Mfg. Co., Norwalk, Conn., is circulating an 8-page illustrated booklet in which a free floating coupling is described and illustrated. According to the bulletin, the function of this coupling is to transmit power from one shaft to another, though the shafts are not in alignment, without causing strains in the shafts or bearings. This is accomplished by transmitting the power through a center link which fits into sockets in the hubs so that it is free to rock in any direction and float laterally.

CABLEWAY—The Deschanel Engineering Corp., New York, is circulating an illustrated bulletin in which a cableway is described and illustrated. This cableway is designed especially for meeting the handling problems confronting industrial plants, coal dealers, etc., in unloading material from railroad cars and barges to ground storage, or direct to boiler house, bunkers and coal bins. It is flexible and adaptable to a great variety of conditions. A full description is given in the booklet and the illustrations show actual installations.

MOTOR STARTER—The Monitor Controller Co., Baltimore, has published a 16-page illustrated booklet in which starters for small motors are described and illustrated. This starter is for induction motors up to 5 horsepower, 110 volts and 10 horsepower, 220, 440 and 550 volts. It is compact, light and completely enclosed in a sheet metal box. It is operated by a 3-wire control station of the momentary contact type. Where desirable any number of stations may be connected to operate the same starter. A complete description of the apparatus is given.

OIL BURNERS—A 32-page illustrated booklet has been published by the Denver Fire Clay Co., Denver, Colo., in which oil burners are described and illustrated. According to the foreword of the booklet, the purpose of the catalog is to aid in the selection of fuel and oil burning equipment by describing what has been found through experiments, much study and competition to be the best methods of burning liquid fuel. The illustrations show various burner applications, low pressure burners, high pressure burners, combination burners, motor blowers, blast valves and tuyeres. Complete description and specifications are given.

REVERSING VALVES—A 4-page circular has been published by the Blaw-Knox Co., Pittsburgh, in which damper type reversing valves are described. According to the folder, in most furnaces the draft in the flue between valves and generators ranges between 40 and 60 per cent of the draft in the stack. The draft loss is caused by frictional resistance set up by sharp turns and small areas of valves which lead the gases out of the flues. This valve resistance can be eliminated by the use of reversing valves. According to the folder any degree of draft desirable up to the limit of stack capacity can be made effective at the checkers by manipulation of the stack damper.

CRANKSHAFT FORGING — The Davis-Bournonville Co., Jersey City, N. J., has published a 4-page bulletin containing a reprint of an article by Fred E. Rogers. According to the article, mechanically-operated cutting torches are suited to heavy crankshaft cutting, both for preliminary operations and for the subsequent cuts when the cranks have been twisted to the required angle. A portable, self-propelled machine weighing about 50 pounds, can be adjusted to any position required for cutting. The torch may be adjusted to any angle and cutting will proceed at the angle set, through steel of any thickness up to 15 inches or more.

RHEOSTAT—The Allen-Bradley Co., Milwaukee, has published a 4-page illustrated folder in which a rheostat for general laboratory use is described. This rheostat has a normal capacity of 200 watts but will stand 500 to 1000 watts under momentary loads. It has a resistance range in the ratio of 100 to 1 for the whole column of disks. The use of a smooth glass material for insulating the disks from the support rod reduces friction to a minimum. It will carry a maximum of 40 amperes continuously and is suitable for use on either alternating or direct current circuits up to 250 volts. It is portable and may be used in either a vertical or horizontal position, or attached underneath a bench in an inverted position.

STOCK LIST—Joseph T. Ryerson & Son, Chicago, have just published their stock list for January and February. The booklet is unique, as in addition to the regular stock lists, it contains a 30-page "magazine" section, which contains a number of interesting discussions, trade notes, and news of general interest to the trade. A complete index is given in the front of the booklet. In addition a thumb index makes it easy to find any steel product listed instantly. This issue of the stock list is larger than former ones, the number of pages being doubled, as in addition to the magazine section, a stock list of machinery and small tools has been added. The magazine section it is expected will serve as a means for the exchange of suggestions and ideas, as well as criticisms, and also will act as a clearing house and help in disposing of odd stocks and used machinery.

ELECTRIC TOOLS—The Woodack Electric Tool Corp., Chicago, is circulating an illustrated bulletin in which a combination portable electric drill and grinder is described and illustrated. This tool is designed for shops and factories where drilling and grinding operations are performed on such a scale as not to warrant the purchase of two separate machines. The tool can be used for drilling in metal or wood and with grinding wheel attachment it is claimed it will cover the average run of grinding, polishing and buffing. It has a drilling capacity of ⅜-inch to ⅝-inch in mild steel, ½-inch to 1¼ inches in hard wood. When used as a grinder it carries a ¾-inch x 6-inch grinding wheel. Two separate speeds are provided, the high speed for grinding and the low for drilling. The speeds are changed by a speed changing device which operates on the inside of the casing. It is of the positive type and remains on either high or low speed as set by shifting the speed change knob in and out. The tool is equipped with a motor of the laminated type and can be operated on both direct and alternating current of the same voltage, also on any cycle of single phase, alternating current from 60 and down. A complete description of the tool is given in the booklet.

Business Changes

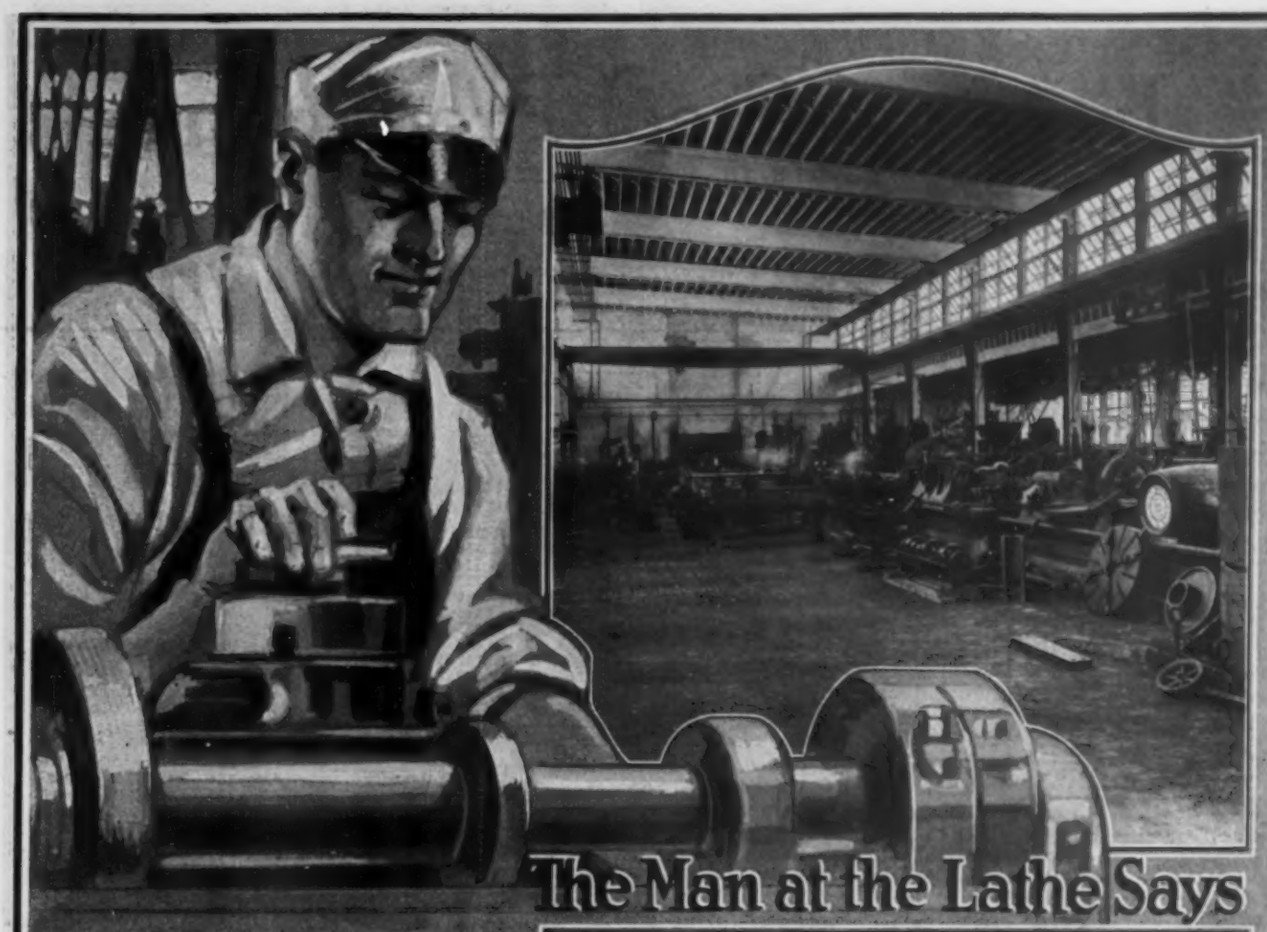
THE Charter Oak Machine Co., Hartford, Conn., is to move from its present quarters at 438 Asylum street, that city, into its new factory on the boulevard in East Hartford, Conn., by April 1 and is to occupy the north half of the building. The other part is to be rented.

* * *

Change has been made in the name of the International Lubrication Co., Ltd., Evanston, Ill., to the International Refining & Mfg. Co.

* * *

The Dale Machinery Co., Inc., New York city, has moved its offices from 54-60 Lafayette street, to 17 East Forty-second street. The company deals in machine tools, railway and shipyard equipment.



The Man at the Lathe Says

"Before those Republic engineers put in this KREODONE WOOD BLOCK FLOOR I used to stand all day on a mat. Honestly, my mind was on my feet as much as it was on my work. Now I never give the tootsies a thought—KREODONE takes care of them; I concentrate on making this old lathe turn out dollars. Another thing: KREODONE takes a toe hold on dust. I never find it crawling into the bearings to gum up the works. Drop anything on the floor—no damage. Bat Nelson never had anything on it for taking punishment . . . . I told the Republic engineer who calls every few months to see how the floor was standing up he'd be dead before his services were needed."

KREODONE is the world's standard for wood block quality—high grade timber treated only with pure, unadulterated creosote oil.

To protect them from the weather, we invariably ship Kreodone floor blocks in closed freight cars, without extra charge to the customer.

REPUBLIC CREOSOTING COMPANY

Original Makers of Wood Block Floors

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Plants: Indianapolis Minneapolis Mobile Seattle Norfolk

Erie County Bank Bldg., Buffalo
152 Bay Street, Toronto, Canada
516 Beacon Bldg., Boston
Berkley Ward, Norfolk
222 Society for Savings Bldg., Cleveland

BRANCHES

St. Louis Park, Minneapolis
317 Hammond Street, Cincinnati
August Court Co., Agents,
419 Chemical Building, St. Louis

Builders Specialty Co., Omaha
834 Real Estate Trust Bldg., Philadelphia
445 Central Bldg., Seattle
Masonic Temple, Mobile
211 Hamond Bldg., Detroit

Iron and Steel Production

Compiled By THE IRON TRADE REVIEW

Pig Iron

	-Stacks- No.	In	Output Total	Av. daily
1907				
January	376	311	2,174,801	69,509
February	374	308	2,047,036	73,109
March	377	304	2,186,709	70,539
April	378	327	2,226,708	74,223
May	391	329	2,291,030	73,904
June	392	341	2,237,420	74,580
July	396	335	2,253,243	72,685
August	397	329	2,243,656	72,376
September	399	329	2,174,148	72,471
October	401	314	2,359,690	76,119
November	398	226	1,820,558	60,685
December	398	154	1,234,733	39,830
Total			25,299,732	
1908				
January	398	139	1,081,843	34,316
February	401	150	1,086,809	37,476
March	398	154	1,229,856	39,672
April	398	146	1,155,122	38,504
May	396	145	1,168,002	37,677
June	395	154	1,106,300	36,876
July	397	166	1,228,604	39,632
August	399	181	1,366,019	44,065
September	399	189	1,416,252	47,208
October	400	200	1,573,824	50,764
November	402	212	1,582,314	52,744
December	403	221	1,723,664	55,602
Total			15,680,140	
1909				
January	406	234	1,787,473	57,683
February	407	233	1,682,470	60,088
March	406	229	1,822,024	58,793
April	406	224	1,731,406	57,687
May	407	236	1,866,757	60,218
June	408	240	1,929,929	64,334
July	409	258	2,088,620	67,375
August	412	278	2,232,642	72,021
September	413	297	2,378,655	79,186
October	413	309	2,589,681	84,001
November	414	311	2,532,740	84,425
December	416	314	2,682,702	86,539
Total			25,337,002	
1910				
January	416	311	2,599,995	83,871
February	417	311	2,429,525	86,747
March	417	310	2,588,736	83,580
April	418	291	2,477,700	82,590
May	421	206	1,871,388	60,367
June	420	271	2,288,279	76,276
July	420	254	2,158,124	69,617
August	422	244	2,103,793	67,864
September	420	234	2,048,461	68,282
October	421	230	2,086,205	67,297
November	421	218	1,910,385	63,679
December	421	193	1,779,899	57,192
Total			26,840,314	
1911				
January	421	210	1,766,658	56,985
February	421	226	1,781,285	63,617
March	421	236	2,165,764	69,867
April	421	220	2,044,904	68,163
May	421	206	1,871,388	60,367
June	421	202	1,773,282	59,109
July	423	196	1,776,108	57,294
August	423	206	1,921,832	61,995
September	423	216	1,973,918	65,797
October	421	214	2,092,061	67,486
November	421	214	1,999,100	66,637
December	422	215	2,032,301	65,558
Total			23,198,601	
1912				
January	421	227	2,052,806	66,220
February	422	235	2,098,796	72,372
March	420	237	2,411,529	77,791
April	421	239	2,377,621	79,254
May	423	243	2,503,341	80,753
June	424	242	2,433,737	81,125
July	422	245	2,402,567	77,502
August	423	255	2,500,163	80,650
September	419	262	2,444,454	81,482
October	422	280	2,683,645	86,569
November	423	289	2,639,562	87,985
December	423	291	2,777,292	89,590
Total			29,325,513	
1913				
January	423	297	2,287,800	89,929
February	423	306	2,778,670	92,095
March	423	278	2,562,823	89,123
April	421	297	2,754,353	91,812
May	421	285	2,716,825	90,865
June	422	283	2,816,883	87,229
July	422	264	2,658,275	82,525
August	424	260	2,537,918	81,839
September	425	258	2,594,098	83,137
October	425	244	2,439,924	81,933
November	424	225	2,529,960	74,322
December	424	191	1,976,138	63,746
Total			30,652,767	
1914				
January	423	199	1,879,336	60,624
February	423	219	1,888,607	67,450
March	423	232	2,341,551	75,534
April	422	212	2,261,501	75,383
May	422	198	2,097,019	67,646
June	422	193	1,904,566	63,486
July	422	187	1,955,324	63,075
August	422	187	1,996,483	64,403
September	422	180	1,882,718	62,757
October	422	162	1,767,227	57,007
November	421	150	1,501,269	50,042
December	421	154	1,495,325	48,236
Total			22,970,926	
1915				
January	421	165	1,591,924	51,323
February	421	179	1,666,592	59,521
March	421	190	2,046,280	66,009
April	421	197	2,114,518	70,484
May	421	207	2,255,157	72,747
June	421	221	2,369,932	78,998
July	421	234	2,563,311	82,687
August	421	246	2,774,825	89,510
September	420	266	2,834,342	94,478
October	420	276	3,120,340	100,656
November	421	285	3,035,235	101,174
December	421	295	3,201,605	103,278
Total			29,573,161	
1916				
January	421	304	3,171,878	102,319
February	421	312	3,078,548	106,157
March	422	315	3,327,630	107,343
April	422	320	3,225,496	107,517
May	423	321	3,364,584	108,535
June	423	325	3,213,818	107,127
July	419	316	3,221,127	103,907
August	419	317	3,197,838	103,156
September	419	326	3,208,041	106,935
October	419	328	3,508,180	113,167
November	420	322	3,317,805	110,593
December	422	309	3,184,178	102,715
Total			39,019,123	
1917				
January	422	310	3,159,839	101,930
February	422	317	2,649,935	94,641
March	423	331	3,255,813	105,026
April	425	333	3,328,061	110,936
May	425	340	3,413,677	110,119
June	427	347	3,260,234	108,675
July	429	351	3,337,442	107,659
August	431	355	3,238,970	104,483
September	431	344	3,140,742	104,691
October	433	354	3,296,286	106,332
November	434	344	3,198,597	106,620
December	435	321	2,885,380	93,077
Total			38,164,976	
1918				
January	435	294	2,403,227	77,523
February	435	319	2,318,242	82,794
March	438	338	3,209,996	103,548
April	437	351	3,273,355	109,112
May	437	360	3,451,884	111,351
June	437	353	3,316,148	110,538
July	437	364	3,408,584	109,954
August	439	371	3,378,479	108,983
September	438	364	3,413,223	113,774
October	437	364	3,482,392	112,335
November	437	360	3,347,844	111,595
December	435	351	3,434,114	110,602
Total			38,437,488	
1919				
January	435	330	3,306,279	106,654
February	435	311	2,943,347	105,270
March	435	279	3,088,023	99,614
April	435	216	2,474,374	82,479
May	433	197	2,107,729	67,991
June	433	199	2,114,028	70,467
July	434	240	2,424,212	78,200
August	432	266	2,742,081	88,453
September	433	163	2,480,790	82,692
October	432	216	1,864,424	60,142
November	432	252	2,407,369	80,244
December	432	262	2,626,074	84,711
Total			30,578,730	
1920				
January	432	285	3,012,373	97,172
February	432	305	2,984,257	102,904
March	433	315	3,375,768	108,895
April	433	278	2,752,670	91,754
May	433	297	2,991,825	96,510
June	433	302	3,046,623	101,553
July	434	291	3,043,918	98,190
August	434	306	3,145,536	101,168
September	434	317	3,124,308	104,173
October	435	290	3,288,341	106,075
November	435	255	2,935,081	97,836
December	435	202	2,700,268	87,105
Total			36,400,968	
1921				
January	436	184	2,414,753	77,895
February	436	155	1,927,088	68,906
March	436	103	1,593,542	51,447
April	436	96	1,190,751	39,691
May	436	90	1,215,272	39,202
June	436	74	1,064,007	35,466
July	435	69	864,642	27,892
August	435	69	954,901	30,802
September	435	84	985,795	32,857
October	435	95	1,234,450	39,821
November	429	120	1,414,958	47,165
December	429	123	1,642,775	52,992
Total			16,506,564	
1922				
January	430	127	1,545,804	53,090

Lake Ore Shipments

Gross Tons, Rail and Water

1921	22,799,077
1920	60,411,572
1919	48,546,651
1918	62,836,172
1917	64,437,003
1916	66,658,466
1915	47,272,751
1914	32,729,726
1913	49,947,116
1912	48,221,546

Ingots and Castings

By American Iron and Steel Institute

	Ingots	Castings	Total
1912	30,284,682	966,621	31,251,303
1913	30,280,130	1,020,744	31,300,874
1914	22,819,784	693,246	23,513,030
1915	31,284,212	866,824	32,151,036
1916	41,401,917	1,371,763	42,773,680
1917	43,619,200	1,441,407	45,060,607
1918	43,051,022	1,411,410	44,462,432
1919	33,694,795	976,437	34,671,232
1920	40,881,392	1,251,542	42,132,934

Monthly Ingot Output

1921	Gross Tons 84.2 per cent of capacity	Indicated total
January	2,203,186	2,620,000
February	1,749,477	2,080,000
March	1,570,978	1,860,000
April	1,213,958	1,440,000
May	1,265,850	1,500,000
June	1,003,406	1,190,000
July	803,376	955,000
August	1,138,071	1,350,000
September	1,174,740	1,400,000
October	1,616,810	1,900,000
November	1,660,001	1,970,000
December	1,427,093	1,680,000
Total	16,826,946	19,945,000
1922		
January	1,593,482	1,890,000

FORT DODGE and Chronicle MESSENGER

M. & C., NO. 181 FRIDAY EVENING, DECEMBER 16, 1921

CLEVELAND, O., Dec 16.—The Iron Trade Review today says:

Fewer outstanding tonnages are appearing among current iron and steel sales yet the miscellaneous flow of small orders is surprisingly well maintained. It is this fact that reveals a condition of reduced stock and of fundamental consumptive requirements which it is believed will come into greater evidence after the general restraint upon buying at the year's end shall have been lifted. Steelworks operations are a little lower this week and the industry has adjusted itself to the expectation of a quieting down period for the next few weeks.

November's relatively slight gain in steel ingot production of 2.7 per cent was in line with the manifest difficulty the market has encountered in continuing its expansion much above the 50 per cent mark. The November output was at the annual rate of 23,580,000 tons, compared with the rate of 22,970,000 tons in October. This indicates an activity of approximately 54 per cent of operating capac-

The Fort Dodge Messenger and Chronicle is one of the leading newspapers of Iowa. It is a consolidation of the Messenger, 65 years old, and the Chronicle, 37 years old.

400 Newspapers Regularly Quote

THE IRON TRADE REVIEW

CLEVELAND

The international reputation and the World-wide circulation of THE IRON TRADE REVIEW is the result of year after year of unfailing Editorial accuracy and reliability.

PROOF—

THE IRON TRADE REVIEW

"The Most Widely Quoted Trade Paper In The World"

Iron and Steel Prices

Iron Ore

LAKE SUPERIOR ORES

Per Gross Ton Lower Lake Ports

Old range Bessemer, 55 per cent iron..$6.45
Mesabi Bessemer, 55 per cent iron..... 6.20
Old Range nonbessemer, 51½ per cent iron 5.70
Mesabi nonbessemer, 51½ per cent iron 5.55

PORT HENRY IRON ORE

Per Gross Ton, F.o.b., Port Henry

Old bed 21 furnace.....$4.85
Old bed concentrates, 63 per cent..... 5.75
Harmony, cobbed, 63 per cent..... 5.75
New bed, low phos., 65 per cent. 8.50
Lump ore for fix..... 6.00

Manganese Ore

Brazilian, 48 to 50 per cent c.i.f. Atlantic ports, 22 cents per unit.

Indian 48 to 50 per cent c.i.f. Atlantic ports, 22 cents per unit.

Fluor Spar

Washed gravel Kentucky and Illinois mines, per ton.....$17.00 to 20.00

Rivets

Structural rivets ..... 2.00c to 2.25c
Boiler rivets, Pittsburgh..... 2.10c to 2.35c
Rivets ½-in. and smaller, Pittsburgh .....70-10 and 5 to 70-10-10 off

Nuts and Bolts

NUTS

(Up to 1¼ and 1⅜ inches inclusive)

Hot pressed, square blank.....$5.50 off
Hot pressed, square tapped..... 5.00 off
Hot pressed, hexagon blank..... 5.50 off
Hot pressed, hexagon tapped..... 5.00 off
Cold pressed, square tapped..... 5.00 off
Cold pressed, square blank..... 5.25 off
Cold pressed, hexagon tapped..... 5.00 off
Cold pressed, hexagon blank..... 5.25 off
Cold pressed semifinished hexagon nuts ½-in. and larger.....70-10-10 off
Cold pressed semifinished hexagon nuts ⅜-inch and smaller....70-10-10-10 off
Case hardened, finished, hexagon..75-70½ off
Price f.o.f. Pittsburgh, Packages of 50.

CARRIAGE BOLTS

⅜ x 6 inches, smaller and shorter

Rolled thread .....65-10-10 off
Cut thread .....65-10 to 70 off
Larger and longer.....65-10 to 70 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread .....70-10-5 to 70-10-7½ off
Cut thread .....70-5 to 70-10 off
Larger and longer.....65-10-5 to 70-10 off

(⅜ x 4 inches, cold punched nuts)

Cut thread .....65-5 off
Larger and longer.....65 off
Lag screws .....70-10 to 70-10-5 off
Plow bolts Nos. 1, 2 and 3 heads...60-10 off

Warehouse Prices

STEEL BARS

Boston	2.555c
Buffalo	2.55c
Chicago	2.53c
Cincinnati	2.65c to 2.90c
Cleveland	2.36c
Detroit	2.58c
New York	2.53c
Philadelphia	2.35c to 2.50c
San Francisco	3.25c
Seattle	3.50c
St. Louis	2.625c
St. Paul	3.06c
Los Angeles	3.10c

IRON BARS

Boston	2.555c
Buffalo	2.55c
Chicago	2.53c
Cincinnati	2.65c to 2.90c
Detroit	2.73c
New York	2.53c
Philadelphia	2.35c to 2.50c
St. Louis	2.625c

SHAPES

Boston	2.655c
Buffalo	2.65c
Chicago	2.63c
Cincinnati	2.75c to 3.00c
Cleveland	2.46c
Detroit	2.68c
New York	2.63c
Philadelphia	2.35c to 2.50c
San Francisco	3.25c
Seattle	3.50c
St. Louis	2.725c
St. Paul	3.06c
Los Angeles	3.50c

PLATES

Boston	2.655c
Buffalo	2.65c
Chicago	2.63c
Cincinnati	2.75c to 3.00c
Cleveland	2.46c
Detroit	2.68c
New York	2.63c
Philadelphia	2.35c to 2.50c
San Francisco	3.25c
Seattle	3.50c
St. Louis	2.725c
St. Paul	3.06c
Los Angeles	3.50c

NO. 10 BLUE ANNEALED SHEETS

Boston	3.305c to 3.48c
Buffalo	3.40c
Chicago	3.38c
Cincinnati	3.35c to 3.60c
Cleveland	3.10c
Detroit	3.38c
New York	3.28c
Philadelphia	3.25c
San Francisco	4.10c
Seattle	4.50c
St. Louis	3.475c
St. Paul	3.66c
Los Angeles	4.50c

NO. 28 BLACK SHEETS

Boston	4.50c
Buffalo	4.25c
Chicago	4.15c
Cincinnati	4.50c to 4.75c
Cleveland	4.00c
Detroit	4.15c
New York	3.75c
Philadelphia	3.75c
San Francisco	5.60c
Seattle	5.70c
St. Louis	4.15c
St. Paul	4.43c
Los Angeles	6.00c

NO. 28 GALVANIZED SHEETS

Boston	5.50c
Buffalo	5.25c
Chicago	5.15c
Cincinnati	4.50c to 4.75c
Cleveland	4.75c
Detroit	5.15c
New York	4.75c
Philadelphia	4.75c
San Francisco	6.45c
Seattle	6.70c
St. Louis	5.15c
Los Angeles	6.75c

BANDS

Boston	3.155c
Buffalo	3.15c
Chicago	3.13c
Cincinnati	3.25c to 3.50c
Cleveland	2.96c
Detroit	3.18c
New York	2.13c
Philadelphia	3.10c
San Francisco	3.90c
Seattle	4.00c
Los Angeles	4.00c

HOOPS

Boston	3.315c
Buffalo	3.15c
Cleveland	2.96c
Detroit	3.18c
New York	3.38c
Philadelphia	3.25c
Seattle	4.50c

COLD ROLLED SHAFTING

Boston (round)	3.55c
Buffalo	3.40c
Chicago	3.40c to 3.90c
Cincinnati (round)	3.60c to 3.70c
Detroit	3.50c
New York	3.35c
New York (flats, squares and hexagons)	3.85c
Philadelphia	3.25c
San Francisco	4.65c
Seattle	4.75c
Los Angeles	5.10c
Boston, flats, squares and hexagons	4.05c

Steel Pipe

Pittsburgh basing discounts, jobbers' carloads

STANDARD WEIGHT

Butt Weld

	Black	Galvanized
⅛-inch	54½	28
¼ and ⅜-inch	60	33½
½-inch	65	50½
¾-inch	69	56½
1 to 3-inch	71	58½

Lap Weld

2-inch	64	51½
2½ to 6-inch	68	55½
7 to 8-inch	65	51½
9 to 12-inch	64	50½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	69	56½

Lap Weld

2-inch	62	49½
2½ to 6-inch	66	53½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	50½	33
¼ and ⅜-inch	56	38½
½-inch	62	50½
¾-inch	67	55½
1 to 1½-inch	69	57½
2 to 3-inch	70	58½

Lap Weld

2-inch	62	50½
2½ to 4-inch	66	54½
4½ to 6-inch	65	53½
7 to 8-inch	61	47½
9 to 12-inch	55	41½

DOUBLE EXTRA STRONG—PLAIN ENDS

Butt Weld

½-inch	51	40½
¾ to 1½-inch	54	43½
2 to 2½-inch	56	45½

Lap Weld

2-inch	50	40½
2½ to 4-inch	52	42½
4½ to 6-inch	51	41½
7 to 8-inch	47	33½

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers, carloads

THREADS AND COUPLINGS

Butt Weld

	Black	Galvanized
¼ and ⅜-inch	3½	+22½
½-inch	36½	18½
¾-inch	42½	27½
1 to 1½-inch	44½	29½

Lap Weld

2-inch	39½	25½
2½ to 6-inch	42½	29½
7 to 12-inch	40½	27½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG, PLAIN ENDS

Butt Weld

¼ and ⅜-inch	+ 4½	+37½
½-inch	35½	23½
¾-inch	42½	28½
1 to 1½-inch	44½	30½

Lap Weld

2-inch	40½	27½
2½ to 4-inch	43½	31½
4½ to 6-inch	42½	30½
7 to 8-inch	35½	23½
9 to 12-inch	30½	18½

DOUBLE EXTRA STRONG, PLAIN ENDS

Butt Weld

½-inch	+27	+39
¾-inch	+ 7½	+19½
1-inch	+23½	+35½
1¼-inch	+ 7½	+19½
1½-inch	+ 6½	+18½

Lap Weld

2 and 2½-inch	7½	14½
3 to 4-inch	12½	3½
4½ to 6-inch	11½	2½
8-inch	8½	

Boiler Tubes

L. C. L. discounts. C. L. discounts take 4-Point differential

STEEL

1¼-inch	22½
2 and 2¼-inch	37
2½ to 3-inch	48
3¼ to 4-inch	53

IRON

1½-inch	1
1¾-inch	11
2 and 2¼-inch	21
2½ to 3-inch	26
3¼ to 4½-inch	28

For Handling Both Coal and Ashes

The Peck Carrier Means Economy and Reliability

ONE sturdy reliable unit, instead of several inferior machines for accomplishing the same results.

Handles both coal and ashes with less upkeep than required for individual machines for coal and ashes.

Costs practically the same as elevators, conveyors, skip hoists and other equipment required to do same work—and is more dependable.

Operation and maintenance is less than for any other types of coal and ashes handling apparatus.

Minimum power required, the equipment runs slowly, is noiseless, and is always ready for service.

Back of the Peck Carrier stands the reputation of this Company—with hundreds of successful installations.

We also make:

- Track Hoppers
- Coal Crushers
- Coal Bunkers
- Weigh Larries
- Gates and Chutes
- Drag Scrapers
- Skip Hoists
- Portable Conveyors
- Traveling Water Screens
- Locomotive Cranes
- Electric Hoists

Write for Catalog No. 220, describing many installations and giving names of users.

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Kansas City, Mo . 306 Elmhurst Bldg

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LINK-BELT

Composite Market Record

Monthly Averages of Fourteen Iron and Steel Products, 1913-1922, Compiled by The Iron Trade Review

1922	
February 22	$32.86
February 15	32.88
February 8	32.89
February 1	32.92
Average for January	33.45
January 25	33.27
January 18	33.36
January 11	33.54
January 4	33.64
1921	
December	33.99
November	34.71
October	35.46
September	35.34
August	35.99
July	38.14
June	41.87
May	43.32
April	43.84
March	45.37
February	48.81
January	51.98
Average for year	40.74
1920	
December	54.04
November	63.75
October	68.61
September	68.86
August	68.87
July	68.69
June	$68.29
May	68.66
April	67.49
March	65.47
February	65.63
January	59.40
Average for year	65.65
1919	
December	$5.20
November	52.37
October	49.16
September	48.75
August	48.67
July	48.26
June	48.28
May	48.69
April	48.85
March	52.68
February	53.71
January	53.81
Average for year	50.70
1918	
December	57.24
November	55.67
October	57.53
September	56.56
August	56.67
July	$56.66
June	56.62
May	56.59
April	56.59
March	56.71
February	56.67
January	56.67
Average for year	56.68
1917	
December	56.68
November	58.29
October	67.75
September	83.18
August	89.69
July	89.56
June	82.66
May	73.96
April	66.48
March	61.07
February	56.76
January	55.10
Average for year	70.10
1916	
December	53.68
November	46.77
October	41.50
September	39.97
August	$39.67
July	38.37
June	39.63
May	39.78
April	39.13
March	37.18
February	35.63
January	33.66
Average for year	40.50
1915	
December	31.56
November	28.64
October	26.19
September	25.55
August	24.77
July	24.25
June	23.74
May	22.89
April	22.66
March	22.71
February	22.21
January	21.90
Average for year	24.76
1914	
December	21.58
November	23.39
October	$22.84
September	23.17
August	22.72
July	22.17
June	22.58
May	22.99
April	23.39
March	23.60
February	23.52
January	23.03
Average for year	22.92
1913	
December	23.29
November	24.02
October	24.91
September	25.55
August	25.97
July	26.34
June	26.78
May	27.34
April	27.74
March	27.93
February	28.05
January	27.96
Average for year	26.32

Iron and Steel Statistics

Tin Plate Production

Year	Tin plate Tons	Terne plate Tons	Total Tons
1908	524,448	77,090	601,538
1909	589,929	95,465	685,394
1910	725,411	84,092	809,503
1911	798,814	79,221	878,035
1912	982,830	95,698	1,078,528
1913	854,093	68,472	922,565
1914	969,892	73,098	1,042,990
1915	1,100,913	81,735	1,182,648
1916	1,276,113	107,088	1,383,201
1917	1,616,658	76,946	1,693,604
1918	1,608,124	42,689	1,650,813
1919	1,203,579	85,427	1,289,006
1920	1,539,977	69,112	1,609,089

Sheet Production

Year	Tons
1913	1,921,001
1914	1,668,644
1915	2,106,298
1916	2,492,794
1917	2,595,606
1918	2,176,537
1919	2,316,057
1920	3,133,217

Plate Production

Year	Sheared Tons	Universal Tons	Total Tons
1913	1,844,354	1,158,416	3,002,770
1914	1,346,308	766,133	2,112,441
1915	1,923,199	954,852	2,878,051
1916	2,453,150	1,224,234	3,677,384
1917	2,963,039	1,195,199	4,158,238
1918	3,885,126	1,234,782	5,119,908
1919	2,899,967	992,054	3,892,021
1920	3,505,364	1,249,769	4,755,133

Shape Production

Year	Gross tons
1908	1,083,181
1909	2,275,562
1910	2,266,890
1911	1,912,367
1912	2,846,487
1913	3,004,972
1914	2,031,124
1915	2,437,003
1916	3,029,964
1917	3,110,000
1918	2,849,969
1919	2,614,036
1920	3,306,748

Bar Production

Year	Gross Tons Iron Tons	Steel Tons	Total Tons
1908	685,233	1,301,405	1,986,638
1909	952,230	2,311,301	3,263,531
1910	1,074,163	2,711,568	3,785,731
1911	835,625	2,211,737	3,047,362
1912	944,790	2,752,324	3,697,114
1913	1,026,632	2,930,977	3,957,609
1914	563,171	1,960,460	2,523,631
1915	657,107	3,474,135	4,131,242
1916	993,948	5,236,354	6,230,302
1917	983,926	5,226,031	6,209,957
1918	846,898	5,395,851	6,242,749
1919	446,549	3,945,075	4,391,624
1920	663,032	5,467,208	6,130,240

Tube Production

Year	Iron	Steel	Total
1913	276,067	1,969,465	2,245,532
1914	212,147	1,525,557	1,737,704
1915	206,513	1,713,161	1,919,674
1916	278,117	2,372,941	2,651,058
1917	273,890	2,213,087	2,486,977
1918	202,958	2,087,521	2,290,479
1919	162,356	2,212,575	2,374,931
1920	199,673	2,803,052	3,002,725

Steel Rail Production

Year	Tons
1908	1,920,944
1909	3,023,845
1910	3,635,801
1911	2,822,556
1912	3,327,915
1913	3,502,780
1914	1,945,095
1915	2,204,203
1916	2,854,518
1917	2,944,161
1918	2,540,892
1919	2,203,843
1920	2,604,116

Freight Rates

Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.96
Newark, N. J.	6.72
Boston	7.28
Philadelphia	6.32
Pittsburgh	1.96
Chicago	5.32
St Louis	6.44
Minneapolis, St. Paul	7.60
Buffalo to:	
Albany, N. Y.	$2.52
New England (rail)	5.46
New York and Brooklyn (rail)	5.46
Virginia furnaces to:	
Philadelphia	$5.74
New England	6.58
Brooklyn, Jersey City, Newark	6.16
Birmingham, Ala., to:	
Boston	$10.665
Boston (rail and water)	7.65
Cincinnati	4.50
Chicago	6.66
Cleveland	6.66
Louisville, Ky.	4.12
Minneapolis, St. Paul	9.73
New York	10.265
Philadelphia	8.665
Pittsburgh	7.60
Savannah, Ga.	4.25
St. Louis	5.725
Chicago to:	
Des Moines	$4.725
Minneapolis, St. Paul	3.375
Milwaukee	0.89
Moline, Ill.	1.89
Omaha	6.07
St. Louis	2.80
Ironton and Jackson, O., to:	
Chicago	$5.32
Cincinnati	2.52
Cleveland	3.36
Detroit	3.64
Indianapolis	3.22
Minneapolis, St. Paul	8.40

Finished Material

Pittsburgh, carloads, per 100 pounds, to:	
New York	$0.38
Philadelphia	0.36
Boston	0.405
Buffalo	0.295
Baltimore	0.35
Cleveland	0.24
Cincinnati	0.32
Chicago	0.38
Detroit	0.32
Minneapolis and St. Paul	0.66
Denver	1.32
St. Louis	0.475
New Orleans	0.515
Birmingham	0.765
Pacific coast (all rail)	1.665
Pacific coast (tin plate)	1.665

Some Examples of
Pressed Steel Practice

These three items show how far superior Pressed Steel may be in certain instances over other methods of manufacture. They have been selected from among many cases in which our engineers have developed parts that are much more efficient, more easily and much more rapidly produced, and cost considerably less than previous production.

Possibly some part that you are using, if not the whole, could be handled more economically. Even where an article seemingly does not permit the use of Pressed Metal, a slight change in its design may bring it within the scope of the rapid, low-cost production of our presses.

Parish and Bingham Engineers are specialists in finding the right way to produce Pressed Metal Articles.

Gasoline Tank Support
Formerly made from Malleable Casting or Drop Forging

Motor Support
Formerly a Casting

Tire Carrier
This was formerly a Casting

THESE PARTS

ARE Stronger and lighter than castings and their weight and shape are always uniform.

ARE Delivered finished, requiring no machine work.

ARE Punched for holes without the necessity of drill jigs.

ARE Tougher than castings, are not brittle, and will not break under shocks or strains.

ARE Produced much more rapidly than castings and at less cost per piece.

Parish & Bingham Corporation

Builders of Automobile Frames and Steel Stampings

CLEVELAND, OHIO

Iron and Steel Scrap Prices

CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	$11.00 to 12.00
Boston (dealers)	7.00 to 8.00
Buffalo	13.50
Chicago	11.50 to 12.00
Cincinnati	8.50 to 9.00
Cleveland	12.00 to 12.25
Detroit (dealers)	8.75 to 9.00
Eastern Pennsylvania	12.00 to 12.50
New York (dealers)	7.50 to 8.00
Pittsburgh	14.25 to 14.75
San Francisco	9.00 to 10.00
St. Louis	10.00 to 10.50
Valleys	14.25 to 14.75

BUNDLED SHEETS

Buffalo	$7.00 to 7.50
Cleveland (hydraulic)	9.50 to 10.00
Cincinnati	4.00 to 4.50
Eastern Pennsylvania	9.50 to 10.00
Pittsburgh	11.00 to 11.50
St. Louis	4.25 to 4.75
Valley (hydraulic)	11.75 to 12.00

STEEL RAILS, SHORT

Birmingham	$12.00 to 12.50
Boston (dealers)	9.00 to 10.00
Chicago	13.00 to 13.50
Cincinnati	10.00 to 11.00
Cleveland	11.75 to 12.25
St. Louis	11.50 to 12.00

STOVE PLATE

Birmingham	$13.00 to 13.50
Boston	11.50 to 12.00
Buffalo	15.00 to 16.00
Chicago	14.50 to 15.00
Cincinnati (net)	8.50 to 9.00
Cleveland	13.00 to 13.25
Detroit	10.00 to 11.00
Eastern Pennsylvania	14.00 to 14.50
New York	9.50 to 10.00
Pittsburgh	12.50 to 13.00
St. Louis	13.00 to 13.50

LOW PHOSPHORUS

Buffalo	$17.00
Cincinnati	16.50 to 17.00
Eastern Pennsylvania	16.50 to 17.00
Pitts. billet and bloom crops	17.00 to 17.50

SHOVELING STEEL

Chicago	$11.25 to 11.50
Pittsburgh	11.00 to 11.50
St. Louis	9.50 to 10.00

KNUCKLES, COUPLERS & SPRINGS

Chicago	$12.50 to 13.00
Eastern Pennsylvania	15.00 to 16.00
Pittsburgh	14.75 to 15.25
St. Louis	12.00 to 12.50

COMPRESSED SHEETS

Buffalo	$11.00 to 12.00
Chicago	7.00 to 7.50
Pittsburgh	12.50 to 13.00

FROGS, SWITCHES, GUARDS

Chicago	$11.50 to 12.00
Eastern Pennsylvania	12.00 to 12.50
St. Louis	9.00 to 9.50

BOILER PLATE, CUT

Detroit (dealers)	$6.00
St. Louis (dealers)	6.50 to 7.00

ANGLE BARS—STEEL

Chicago	$12.00 to 12.50
St. Louis	9.00 to 9.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham, No. 1	$11.50 to 12.00
Boston (dealers)	11.00 to 12.00
Buffalo	15.00 to 16.00
Chicago, No. 1	12.00 to 12.50
Chicago, No. 2	11.50 to 12.00
Cincinnati, No. 1	8.50 to 9.50
Cleveland, No. 1	12.00 to 12.25
Eastern Pennsylvania, No. 1	15.00 to 16.00
Pittsburgh, No. 1	12.00 to 12.50
Pittsburgh, No. 2	14.25 to 14.75
Pittsburgh, No. 2	14.00 to 14.50
St. Louis, No. 1	11.50 to 12.00
St. Louis, No. 2	11.00 to 11.50

WROUGHT PIPE

Boston (dealers)	7.00 to 7.50
Buffalo	9.50 to 10.50
Eastern Pennsylvania	12.00 to 13.00
New York (dealers)	7.00 to 7.50

YARD WROUGHT

Boston	$8.00 to 9.00
Eastern Pennsylvania, No. 1	13.00 to 13.50

CITY WROUGHT

New York, long	$10.25 to 10.75

BUSHELING

Buffalo, No. 1	$11.00 to 12.00
Chicago, No. 1	9.50 to 10.00
Chicago, No. 2	6.25 to 6.75
Cincinnati, No. 1	7.00 to 7.50
Cleveland, No. 1	9.00 to 9.25
Cleveland, No. 2	7.00 to 7.25
Eastern Pennsylvania, No. 1	11.50 to 12.50
Pittsburgh, No. 1	11.25 to 11.50
St. Louis, No. 1	10.00 to 10.50

MACHINE SHOP TURNINGS

Birmingham	$3.50 to 4.00
Boston (dealers)	3.50 to 4.00
Buffalo	8.00 to 9.00
Chicago	5.00 to 5.50
Cincinnati	3.50
Cleveland	8.75 to 9.00
Detroit (dealers)	5.00
Eastern Pennsylvania	10.00 to 11.00
New York (dealers)	4.50 to 5.00
Pittsburgh	9.50 to 10.00
St. Louis	4.00 to 4.50
Valleys	9.00 to 9.25

CAST IRON BORINGS

Birmingham (chemical)	$13.40
Boston (chemical)	8.50 to 9.00
Boston (dealers)	8.00 to 8.50
Buffalo	8.50 to 9.50
Chicago	7.00 to 7.50
Cincinnati	3.50 to 4.00
Cleveland	8.75 to 9.25
Detroit (dealers)	6.50 to 7.00
Eastern Pennsylvania	12.00 to 12.50
Eastern Pennsylvania (chemical)	13.50 to 14.50
Pittsburgh	11.50 to 12.00
New York (dealers' price)	7.00 to 7.50
St. Louis	7.00 to 7.50
Valleys	11.00 to 11.50

MIXED BORINGS AND TURNINGS

(For blast furnace use)

Boston (dealers)	$4.00 to 4.50
Cleveland	8.85 to 9.25
Eastern Pennsylvania	9.50 to 10.00
New York (dealers)	4.50 to 5.00

IRON AXLES

Birmingham	$20.00 to 21.00
Buffalo	26.00
Chicago	22.00 to 22.50
Cincinnati	16.00 to 16.50
Cleveland	19.00 to 20.00
Detroit	19.00
Eastern Pennsylvania	25.00 to 26.00
New York (dealers)	20.00 to 21.50
Pittsburgh	24.00 to 25.00
St. Louis	20.00 to 20.50

IRON RAILS

Buffalo	$17.00 to 18.00
Chicago	16.00 to 16.50
Cincinnati	10.50 to 11.50
Cleveland	13.50 to 14.00

PIPES AND FLUES

Chicago	$7.00 to 7.50
Cincinnati	4.00 to 4.50
Cleveland	9.00 to 9.50
Detroit	5.00 to 6.00
St. Louis	7.50 to 8.00

RAILROAD GRATE BARS

Buffalo	$12.00 to 13.00
Chicago	12.00 to 12.50
Cleveland	13.00 to 13.25
Detroit	8.00 to 9.00
Eastern Pennsylvania	14.00 to 14.50
New York (dealers)	9.50 to 10.00
St. Louis	10.50 to 11.00

FORGE FLASHINGS

Boston (dealers)	$4.50 to 5.00
Chicago, small	7.00 to 7.50
Cleveland, small	9.50 to 9.75
Cleveland, large	7.75 to 8.00
Detroit (dealers)	6.00 to 6.50

FORGE SCRAP

Boston	$4.50 to 5.00
Chicago	11.50 to 12.00
Eastern Pennsylvania, No. 1	10.00 to 10.50

ARCH BARS AND TRANSOMS

Chicago	$17.00 to 17.50
St. Louis	16.00 to 16.50

ANGLE BARS—IRON

Chicago	$15.50 to 16.00
St. Louis	11.50 to 12.00

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	$4.75 to 5.25
Buffalo	11.00 to 12.00
Chicago	8.00 to 8.50
Cleveland	9.00 to 9.50
Detroit	7.00 to 7.50
Eastern Pennsylvania	10.00 to 10.50
Pittsburgh	11.00 to 11.50
St. Louis	6.50 to 7.00

STEEL CAR AXLES

Birmingham	$14.00 to 15.00
Boston (dealers)	11.00 to 11.50
Buffalo	20.00 to 21.00
Chicago	14.50 to 15.00
Cleveland	17.00 to 17.25
Eastern Pennsylvania	17.00 to 18.00
New York (dealers)	11.00 to 11.50
Pittsburgh	14.50 to 15.00
St. Louis	14.00 to 14.50

SHAFTING

Boston (dealers)	$13.00 to 14.00
Chicago	16.25 to 16.75
Eastern Pennsylvania	19.50 to 20.00
New York (dealers)	12.50 to 13.00
St. Louis	14.00 to 14.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	$13.00 to 14.00
Birmingham, tram car	12.00 to 12.50
Boston (consumers)	15.00 to 16.00
Buffalo, iron	15.50 to 16.50
Chicago, iron	15.00 to 15.50
Cincinnati	11.00 to 11.50
Cleveland, iron	13.00 to 13.50
Detroit	11.50 to 12.00
Eastern Pennsylvania, iron	16.50 to 17.00
New York, iron (dealers)	11.00 to 11.50
Pittsburgh, iron	15.00 to 15.50
Pittsburgh, steel	14.75 to 15.25
St. Louis, iron	13.00 to 13.50

NO. 1 CAST SCRAP

Birmingham, cupola	$16.00 to 17.00
Boston (consumers)	17.50 to 18.00
Buffalo	16.25 to 16.50
Chicago, cupola	14.75 to 15.25
Cincinnati, No. 1, machinery, cupola (net)	12.00 to 13.00
Cleveland, cupola	16.50 to 17.00
Eastern Pennsylvania, cupola	16.50 to 17.50
New York, cupola (dealers)	13.50 to 14.00
Pittsburgh, cupola	16.00 to 16.50
San Francisco	22.00 to 23.00
St. Louis, agricultural	14.00 to 14.50
St. Louis, railroad	14.50 to 15.00
Valleys	16.50 to 17.00

HEAVY CAST

Boston (consumers)	$15.50 to 16.00
Buffalo	14.00 to 14.50
Cleveland	12.00 to 12.25
Eastern Pennsylvania	14.25 to 14.75
New York (dealers)	13.00 to 13.50
Pittsburgh	14.25 to 14.75

MALLEABLE

Boston, railroad	$12.50 to 13.00
Buffalo	13.00 to 14.00
Chicago, railroad	13.25 to 13.75
Chicago, agricultural	13.25 to 13.75
Cincinnati, agricultural	8.00 to 8.50
Cincinnati, railroad	8.00 to 8.50
Cleveland, agricultural	10.25 to 10.50
Cleveland, railroad	12.75 to 13.00
Detroit	8.50 to 9.00
Eastern Pennsylvania, railroad	13.00 to 14.00
Pittsburgh, railroad	12.00 to 12.50
Pittsburgh, agricultural	11.50 to 12.00
St. Louis, agricultural	9.00 to 9.50
St. Louis, railroad	9.50 to 10.00

Miscellaneous Scrap

REROLLING RAILS

5 feet and over

Birmingham	$12.00 to 12.50
Boston (dealers)	9.00 to 9.50
Chicago	12.00 to 12.50
Cleveland	15.00 to 16.00
Detroit (dealers)	9.00 to 9.50
Eastern Pennsylvania	16.00 to 16.50
New York (dealers)	13.50 to 14.50
Pittsburgh district	15.50 to 16.00
St. Louis	10.50 to 11.00

LOCOMOTIVE TIRES

Chicago	$10.75 to 11.25
St. Louis	9.00 to 9.50

LOW PHOSPHORUS PUNCHINGS

Chicago	$12.00 to 12.50
Eastern Pennsylvania	15.00 to 16.00
Pittsburgh	15.00 to 15.25